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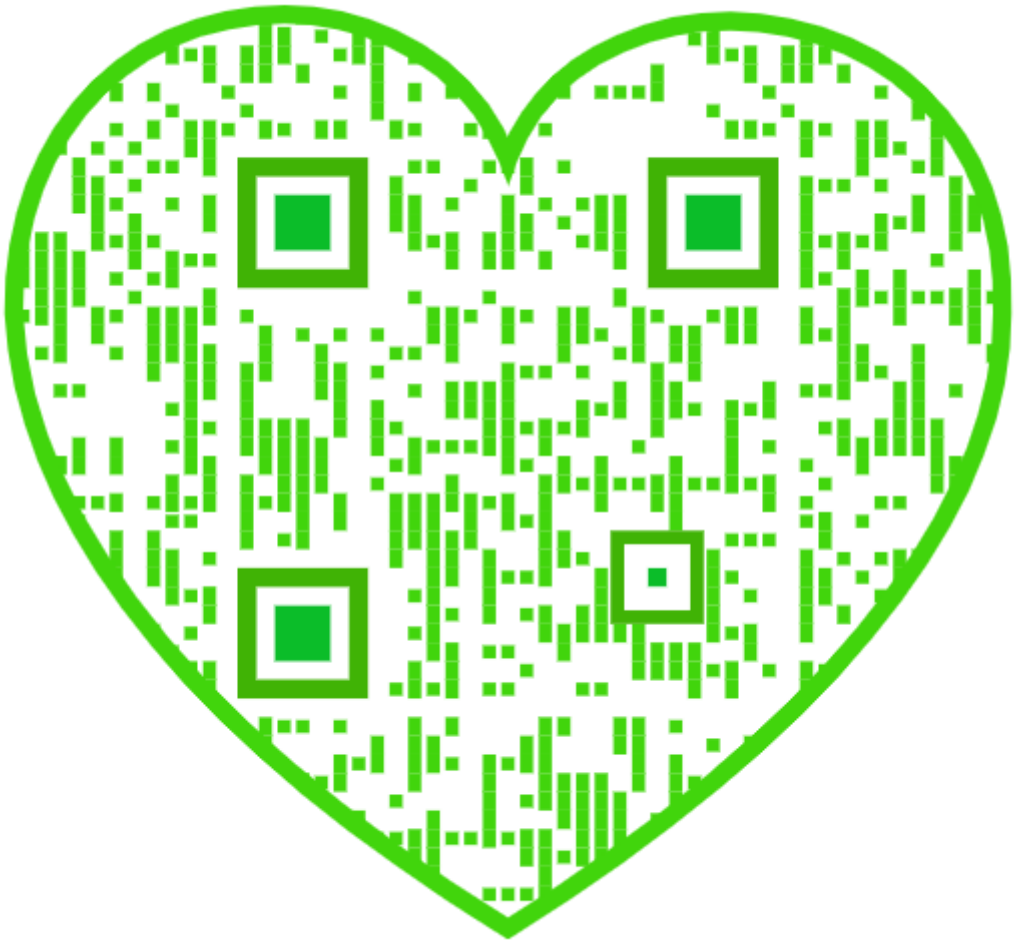
THE

Stockowner's Guide,

BY

D. A. CORMACK, D. V. S.



THE

Stockowner's Guide,

TREATING

ON THE

CARE AND FEEDING

OF

LIVE STOCK.

DISEASES OF LIVE STOCK AND THEIR TREATMENT,
NOTES ON THE HORSE, COW, SHEEP,
DOG AND POULTRY.

BY
D. A. CORMACK, D. V. S.
WATERTOWN, S. D.

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PREFACE.

As a practicing Veterinary Surgeon, I have become deeply impressed of the necessity of Stockowners in the Northwestern states having some practical work on the causes and treatment of the diseases of live stock, especially is this so in the states of South Dakota, North Dakota, Washington, and possibly other Northwestern states.

In the state of South Dakota at the present time there are not one dozen Veterinary Surgeons. Of course in every city, town and hamlet there are self-made hoss-doctors, (quacks), who set themselves up as knowing everything, when the fact of the matter is, they know nothing. These men impose upon you farmers, they pretend to prescribe for your sick animals, charge a high price and most invariably do no good and very often leave the case worse than they found it.

The object of this work is to lay the causes of disease and the treatment thereof before the Stockowners of this country in the most simple manner possible, so that any man who is far from a qualified veterinary surgeon can take up this book, readily find out what is best to be done and thus save his animal's life. "A stitch in time saves nine," is especially true in eight-tenths of the ailments that domestic animals are subject to. The great trouble with most of the publications on diseases and their treatment is that they are too complicated for the general reader, and the result is that the more they read the less they know about what they

have been reading. The further object of this work is to tell the reader what he can do and how to do it, instead of writing pages telling about what he cannot do and cannot possibly understand.

The price of this book is one dollar, (the price of one prescription). How often have you given one, two, or even three dollars to a quack for a single receipt that has never done any good whatever to a poor suffering animal. How often have you tortured your dumb brutes by administering irritating drugs internally and externally, that instead of giving relief they have aggravated the disease. I have no cure-all nostrums that I want to sell. I do not pretend to cure any disease, only quacks say they can cure. Nature cures all disease, and the science of medicine comes in to assist nature in its effort to cure.

Having thus explained the object of the Stockowner's Guide, I hope it may be the means of relieving many faithful and useful animals, and saving the stockowners of the Northwest many times its value.

Respectfully,

D. A. Cormack, D. V. S.

Diseases and Thier Treatment.

THE PULSE.

The pulse of the horse is felt at the inner edge of the lower jaw or on the inside of the forearm, and when the horse is in a natural state of health the pulse beats forty times a minute.

The pulse of the cow is best found (when she is lying down) just below the fore-fetlock. The cow's pulse beats from forty to fifty times per minute except when ruminating, (chewing her cud), when it may beat from seventy to eighty beats per minute.

The pulse of the dog is best felt on the inner side of the thigh, and ranges from eighty to one hundred beats per minute, according to the breed of the animal.

The pulse of the sheep found as that of the cow, beats from seventy to eighty per minute.

GIVING MEDICINE.

The best way to drench a horse is with a drenching bit, which may be had from any dealer in veterinary instruments; but I find the following the best plan without the bit, take a loop of rope or the halter strap, pass one side of it into the mouth over the tongue, and the loop large enough to go over the nose. Let one man take a pitch fork, put one tang through the loop over the nose and lift the horse's head up. The person with the medicine stands on the opposite side with one hand on the side of the horse's head, while with the other he administers the medicine. Give the medicine slowly. If the horse is slow to swallow have a small vial with a little water, drop a teaspoonful of it into his nostril, this will make him swallow. Never drench a horse through the nose, as it is apt to go down on his lungs and set up lung fever and probably kill the horse. Where medicine is given in small doses the best plan is to

measure it out in a cup. Then take a small syringe, say one that will hold about one ounce, with the thumb of one hand in the horse's mouth he will open it, when you can with the other hand use the syringe; put it into the mouth over the tongue, shoot off the medicine, it goes down his throat before he knows it, and one man can do it. A black rubber syringe with a ring on the end for your thumb is the best for this purpose. In drenching cattle the best way is to pass your arm over the forehead, below the horns, put the hand down to the mouth, catch hold of the upper jaw, lift the animals mouth up to your breast and with the other hand give the medicine and give it slowly.

DOSES.

One teaspoonful of liquids represents one dram; one tablespoonful represents one-half fluid ounce; a wine glass about two fluid ounces; a dessert spoon two fluid drams; a teacup about five fluid ounces. The doses laid down are for the horse; cattle take twice as much as a horse; sheep one-third the dose of a horse; dogs take from one-eighth to one-fourth the dose of a horse according to size. Very small dogs will take even one-tenth or one-twelth. Three-year old colts take a full dose; two-year old one-half dose; one-year old takes on-third dose. When possible always have your prescriptions put up at a drug store, and be careful to copy correctly each item in the prescription. Always be very particular in following the instructions laid down for the administration of medicine. Never give a horse a strong dose of physic when there is much fever. Give him about a half dose, and only oil at that; but when there is no fever and the horse requires a good physic, Barbadoes Aloes is the best, prepared and administered as directed elsewhere in this work. Always reduce the dose or stop altogether when you see signs of improvement, otherwise you will be very apt to bring about some other trouble. Medicine assists nature to cure disease. If administered to the healthy animal it will frequently bring on disease. Always be careful and attentive in giving medicine to the sick, the healthy don't require it.

CARE and FEEDING.

"Prevention is better than cure," and in order to prevent a large proportion of the troubles that afflict domestic animals

greater care and more regularity in feeding is of first importance. Especially is this true in regard to the horse. There is no more useful beast in the world than the horse, and he is often most cruelly misused by man; by his services he certainly repays the best of treatment. There is no climate where vegetation grows and man abides that you do not find the horse his willing and faithful servant. The work of this world would be at a stand-still without the aid of the horse, and those to whom he is of so great value should treat him kindly with the food and protection which he so richly deserves.

Physiologists tell us that the living body of any animal, and in a limited sense the body of every living plant, may be regarded as a machine for the performance of work, i. e., the overcoming of resistance. When you lift a stone off the ground you overcome the resistance offered by the action of gravity on the stone. If you wind up your watch you then overcome the resistance of the mainspring of that watch, this is doing work. When you light the fire under the boiler of a steam engine steam is generated and the machinery is moved, and then the work is done by the machine. Thus the animal body is always doing work, muscles move the limbs the heart beats without intermission and forces the blood through the body, the chest heaves in respiration, and all the wonderful processes of digestion, absorption of secretion and of excretion are modes of doing work. So the animal body may be thus regarded as a machine. Any machine gets its power of doing work from without, and after a certain amount of tear and wear it has to be repaired; but the most marked peculiarity of the animal body is that it is self-reparative; hence the necessity of supplying proper fuel and in sufficient quantities and at regular intervals so as to keep the machine (animal body) in good repair. Hygenic laws are very simple and easily understood, but in many instances are totally neglected by farmers and stockowners. If there were greater attention paid to little things many serious troubles would be averted and valuable animals preserved. I have often seen fine animals huddled together in a hut, built of turf, so that when the door is shut they can hardly see their own feed box. It is both difficult and painful for the veterinary surgeon to treat sick animals

in such a place. We have many blind horses in this country, is it any wonder when they are deprived of the life-giving and health-sustaining influence of light? Light is as necessary as air and in general they cannot be separated. The chief physical feature of heaven is light. "Where the sun cannot enter the doctor does," but in giving light don't go to the other extreme and have the eyes dazzled with the blinding effect of excessive light. Few horses with clear, strong eyes are given to shying or bolting.

See that your barn is well ventilated, having a good supply of pure air and outlet for the impure. Pure air is absolutely necessary for all animals, and especially the horse. Birds require more ventilation than any other animal, they are never found in a confined atmosphere. The horse comes next, then the sheep, cattle are more indifferent, while swine are still more indifferent to pure air. If the horse is not supplied with an abundance of pure air he will be more liable to disease than even the constitution of his owner. But pure air does not mean draught, ventilation is healthful, draught is injurious. Fresh air should be admitted from the sides of the building, and the impure carried away through ventilators leading out through the roof. Stable structures should be high, so that if the animals playfully rear up they will not strike their head to the rafters.

Cleanliness is also necessary to the health of all animals. As a rule they are naturally clean, and if they were at liberty they would never befoul their own bed. A barn floor should always be so constructed as to absorb the watery discharges. I prefer clay from four to six inches deep, this with a good bed of oat straw would be very suitable. Clay is a better absorbent than either sand or loam; while sand takes up about one-quarter its own weight of water, and loam nearly one-half its own weight, the clay takes up nearly three-fourths its own weight, so it is with oat straw it is a better absorbent than either wheat or barley straw. The wet bedding should be removed daily or the feet will become foul so that thrush and canker will destroy the frog and sole of the foot of the horse, and footrot and other similar diseases attack the feet of the sheep and cattle. Avoid these troubles by cleanliness and a good, light, well-ventilated barn. Decomposing heaps of manure should never be

allowed to be near the barn doors or windows nor cesspools of stagnant water smelling like rotten eggs, should never be allowed to lie near the buildings, neither inside or outside. Feed boxes and mangers should be carefully washed with warm water and carbolic acid at least once in two weeks. Good, healthy, vigorous animals are the result of pure air andcleanliness with proper care in feeding.

The average horse is cleaned only once a day, generally in the morning before going to work, and even then the cleaning is often harsh and only half done. The curry comb, useful in its place, is used to torture many a victim by raking the hide until it is covered with scratches, and especially is this so when the comb is used on the legs, and when the animal is restive from pain the curry comb or the foot of the groom is too often brought in contact with the animal's ribs as a punishment; such treatment is, to say the least, very cruel indeed.

Feeding is the next important preventative of disease. Injudicious feeding is the cause of a great many of the ills that afflict horseflesh. We have already compared the animal body to a machine in many respects except that it is self-reparative. In supplying fuel to this machine we must consider three things, namely the quality, quantity and time. A careful horseman will always have a certain time for supplying his horse with food and water. Never feed a horse immediatly on entering the stable after work, then he is hungry and will bolt his food. His digestive capacity is different from that of the ox; the horse has only one stomach, and a small one at that for such a large animal. To over feed the hungry stomack brings on congestion, and then your horse may suffer from founder (laminatis) or colic. Immediately after work let the horse rest or eat hay. This he is compelled to eat slowly so that it can do him no harm, after which grain may be fed without injury. It is always advisable to feed crushed grain, as in this state it is easier digested and the animal gets more nutriment than when fed whole. There should be greater variety in the food of our domestic animals. Peas, beans, bran, carrots, etc., can be had cheaply and ought to be fed to the horse. The result will be a finer coat, and less liable to attacks or sickness. The weather must determine the proportions of articles in feeding. During the colder

seasons corn is good as it is rich in fatty matter, but during the warm weather, oats and barley should predominate; but much must depend upon the constitution of the animal, and, as we have already stated, all changes in feeding should be made gradually. Animals in a pasture of mixed grasses have a perfect food and only require in addition a good supply of pure water. Horses should never be allowed a large draught of water immediately after feeding, because by this means the food is forced out of the stomach too soon into the intestines before that part of digestion which is done in the stomach has been accomplished, and when in the intestines in this condition it causes pain and then you have colic, or some other trouble of the bowels which very often terminates in death. Always water your horse before feeding, or if after feeding let it be at least one hour. A horse should rest, at least, three-quarters of an hour after eating grain in order that the stomach may be allowed to complete its part of the digestive process.

I have tried to lay this question of care and feeding before the reader in as plain a manner as possible, so that all may be able to understand. I have seen men who hardly have patience to see their horse treated. They think this and that is the best remedy. To such men I would say, if you do not follow out a proper line of treatment you cannot expect your horse to get better. Don't pour down all kinds of drugs in your poor sick animal, it will do him more harm than good. In the diseases here referred to, do try to do exactly as you are told, no more nor no less. Especially would we impress upon you the necessity of studying the care and feeding of your stock. As we have already stated, there is little use discussing complicated diseases that the average farmer cannot understand. The diseases referred to in these pages compose ninety per cent. of the diseases and injuries that afflict the live stock of the Northwest, and we are satisfied that this little work in the hands of any rational man will be the means of relieving and saving many afflicted animals.

HYGIENE.

There are a large number of intelligent men who seem quite indifferent to this very important matter, nevertheless it is a scientific fact that a great deal of the diseases, both contagious and non-

contagious, with which we have to contend, are caused through the violation of the laws of hygiene. Hygiene is that part of medical science which treats of health; it is of special importance with man, why should it be of less importance with the lower animals? Hygienic means is a part of the prescription of every careful, intelligent physician and veterinarian. When there is an outbreak of disease of any kind you should then see that all corners and crevices are thoroughly cleaned, and very often if such places were always kept clean, disease would be much less apt to break out.

In all cases of contagious, or sporadic diseases, all parts of the building should be well flushed with water, so as to put the place in proper condition by the use of deodorizers, and disinfectants. When you have an outbreak of contagious disease the first thing to be done is to attack and destroy the breeding places of germs before you can reach success. Many diseases will not yield to medicine without hygienic means, the latter holds the health of the animal normal. Simple odors may not be noxious, animal odor is not so, unless confined in their atmosphere; but when putrified and disorganized they are always noxious. Dry pulverized clay is one of the best deodorizers, sawdust and charcoal are also very good. Pulverized gypsum is a very good, cheap absorbant, and should be applied freely in drains, cesspools, or any confined places; also copperas in fine powder, carbolic acid, or chloride of lime.

To detect impure air in any room or building, dampen a white linen cloth with a solution of the nitrate of lead, hang up the cloth in the suspected room; if the air is impure the cloth will be discolored. To disinfect drinking water the permangauate of potash is used in the form of Condy's fluid. Four ounces of Condy's fluid stirred amongst one hundred gallons of bad smelling, unsightly rain water that has been lying in a cistern, or other receptacle, for a long time, will, after four or five hours, render the water fit for use, and perfectly sweet and pleasant to the taste.

Care of the Foot.--Shoeing.

There is no subject relating to the horse receiving more attention at the present time than that of shoeing. We can hardly take up an agricultural or stock journal but what we find something said, either for or against, the practice of shoeing. On reading

many of the articles referred to, we only get the opinion of some theorist who has had no practical knowledge of the subject in hand. In taking up this subject we do so feeling the importance of a proper understanding of the horse's foot, and how to take care of it. We should begin to look after the foot of the colt from its birth. If the hoof is not watched and kept in proper shape while the colt is young we can never have a healthy, well-shaped foot on the matured horse. Every horse owner who is far off from a horse shoer should have a rasp and knife with which to dress the feet of the colts and horses. There is a time coming when you will take that colt to the shop for the purpose of being shod, and if you have been in the habit of handling his feet the first shoeing will be an easy matter, both to the colt and the man who shoes him. We often meet with men who advocate no shoes for the horse. These men lay much stress upon having the foot kept dry and hard to make their plan successful. Some time ago I read an article in which this theory was advocated, the writer went on to say that, "everytime the feet are soaked in water there is a wasting of the life-giving fluid, (the visid matter secreted by the coronary band which fills the small tubes of the hoof), it is driven out by the water, and, as water is easily evaporated, the tubes collapse." The absurdity of the above remark scarcely needs any reply, healthy moisture is the life of the hoof. We see colts that pasture on low-lands where there is plenty of moisture, their hoofs grow rapidly; while those on the dry upland pasture their feet become very hard and shrunken, consequently we do not believe that water judiciously applied to the hoof has any but a beneficial effect. The same writer says, "that nature never intended that iron should be put on the horse foot." For the sake of argument we will grant that nature never did so intend, neither did nature even design the foot for such usage as it gets, especially on the paved streets of our large towns and cities. Take for instance our heavy dray horse drawing a heavy load, watch him as he strains those large, heavy muscles of locomotion to overcome the resistance of the load that is attached to his body. How powerless his efforts would be without shoes. The same rule will apply to light harnessed horses, and racers will not only bolt the track but absolutely refuse to use their full speed

without some protection to their feet. I think we will declare the bare foot advocate "out of court." Considering the nature of the work required of the horse, shoeing is necessary. Let us now consider the principles that ought to be followed in this operation.

Horses are seldom shod before they reach the age of two or three years. When they are first brought to the shop they ought to be treated with great kindness; each foot should be lifted and tapped with the hammer gently. While putting on the shoe they should be allowed to rest frequently, in this way we get them to understand that they are in no danger of being hurt. As to how a horse ought to be shod much must be left to the shoer. He must study the shape of the foot, and how the horse uses it. We mean by the word shoer, a man who has served a proper apprenticeship in learning his trade. How often do we see men who have been helpers in a blacksmith shop for a few months start out in business for themselves, and up goes their shingle announcing that horse shoeing in all its branches is done in their shop. It is unfortunate for many a poor horse that such imposters are allowed to do this. Shoes should always bare on the wall and on the sole for about half an inch. A shoe should be beveled from within to without from the heel to the first nail hole, in order that, as the wall grows down, the bevel on the shoe may incline the wall outward; but most shoes are beveled from without to within, thus forcing the wall inward and causing contracted feet. Six nails are sufficient for any shoe if the shoe is properly fitted to the foot. A red hot shoe should never be put on the foot in order to soften it, so that it will be easy to cut with the knife; spare the life of the hoof and use a little more elbow grease to cut or rasp it down.

In turning the clinches never sink the edge of the rasp under the clinches, you can make a stronger clinch without the groove. The rasp should never be allowed to touch the wall above the clinches, for by so doing the hard enamel, or crust, of the hoof is broken, which must result in injury to the horse. Many horses are permanently lamed by allowing the shoes to remain too long on the foot. I have seen instances of shoes being left on the foot for six months; the owners, no doubt, thinking that they had got value for their money; but they failed to see the injury done to

their horse. Shoes should never be left on farm horses for a longer time than six weeks, and on roadsters four weeks. In taking off a shoe see that every clinch is properly cut off. Many brutal men are in the habit of tearing off the shoe without cutting the clinches, thus often breaking the tender hoof and endangering the horse's foot. In driving the nails take as shallow a hold as possible with safety. If horse owners were more careful of their stock and less careful of their pocket books, by patronizing practically qualified horse shoers, we would hear less about lame feet.

Paring, thining, or removing the sole till it yields to the pressure of the thumb is both barbarous and unreasonable. It is done for no more sensible reason than thinking it makes the foot look neat, or because some ignorant shoer thinks it necessary. Like many of our grandsire's cruel fashions such as cutting and chopping the ears and tails of dogs and horses and other kindred abominations. The evil effects unfortunately are not apparent; but if the animal should place his poor mutilated foot on a sharp stone what pain he must supper. The tenderness and lameness that is apt to follow this practice is generally ascribed to anything but the actual cause, the result may be a horse crippled for life. "Horses that are required to go beyond a walking pace," says a prominent author, "are injured by shoes with turned up heels and toe caulks."

There is no doubt but what shoeing is a necessary evil and the less of the evil that can be done with, the better it must be; consequently, I believe that a tip or three-quarter shoe is the best for a driving horse, especially during the summer months. With such a shoe the heels of the foot, and particularly the frog, is allowed to do the work for which it is intended. The frog is placed there as a pad to break the force of the concussion that is produced when the foot comes to the ground. The bars also are put there by nature. They are the natural pillars placed there to keep the wall of the hoof from falling inward; but when the bars are cut the walls fall in and contracted feet is the result. Some horses have naturally very weak, tender feet. The wall is thin and apt to split with the insertion of nails, such feet always require a thicker shoe. High heeled shoes often cause sidebones because the wall pressure at the heels is unnatural. The frog is prevented from bearing its proper

proportion of weight, consequently the lateral cartilages are suddenly pulled inwards and down and inflamation follows. Navicular disease, (inflamation of the coffin joint), is another trouble that may very often be traced to high heeled shoes. Hunters are not near so liable to these diseases as are harness horses. The same may be said of racers, both the racer and hunter are shod with flat shoes, the frog is allowed to touch the ground; thus the concussive shock which would otherwise be inflicted are modified or destroyed. If the sole is thin and tender protect it with a wide webbed shoe.

In closing we will again remark, that as proper care and feeding is preventive of disease, so also is proper care and shoeing of the foot preventive of lameness. When you see a little accident happen the foot don't go on with your work thinking that it will not do much harm. How often have we seen a horse get a nail in his sole? All that has been done is to pull it out and then urge the poor dumb animal to continue his work. The result is often a disabled horse, for a few months, perhaps forever; whereas if the horse was put in the stable, an opening made in the hard sole down to the sensitive sole about one-half inch in diameter, then the foot poulticed and dressed with carbolic acid, in one week he might be ready for work none the worse of the accident.

Gaiting Young Horses.

We often observe that the action of young horses, after having been broken to work is not proportionate, the propelling power of the hind legs being more than that of the front legs; in order to overcome this, and make them more equal, try the following plan: Make the feet perfectly level and straight, shorten the front feet. If front action is then too slow put on very light, short shoes. Light shoes also for the hind feet, but long in the heels, the heels should be turned outward. Fit the shoe close to the wall around both sides of the heel, and carry them one half inch longer than the foot, the caulks to be one-quarter of an inch high. The long caulked heels seem to lessen the action of the foot.

Balancing the action of horses is one of the most difficult things we have to do, especially the trotting horse. Some are low, long striders, while others step high and short. Some require heavy

shoes, and others light shoes, some bar shoes, some open at the heels, some concave, some convex, flat and rolling, some toe weights, others heel weights, some long toes, others short toes. For a horse that has high, quick and short action, lengthen the toe; but for a horse with long, low action and stiff knees, shorten the toe and use toe weights. One of the principal causes of bad action of horses, when driven up to their best speed, is a soreness in the foot which is often caused by improper shoeing. Much good judgment is required in shoeing the hind feet of trotting horses. A horse-shoer should be very careful in shoeing trotting horses, he should be willing to learn from anyone who may offer the most seemingly simple suggestion, instead of being pig-headed and obstinate, acting as if he knew it all himself. When a man gets to such a state of perfection in any business that he cannot be taught anything more, such a man ought to be labelled as a living curiosity.

Care During Sickness.

We now come to the most important part of our work, imporportant for both the writer and reader. As already stated, the principal aim of this work is simplicity, we will try to use words that the most poorly educated persons may understand, giving the names of the troubles or diseases in plain English, and also using the most common term names for all medicines. In the first place remember that when a horse is sick he requires rest, don't try to work the sickness out of him; look up the trouble and its cause and, if possible, remove the cause; this is the first step in the treatment of all disease. When you commence treatment of a case we ask you to follow strictly our directions. Don't get weary and jump from one remedy to another. Don't follow the advice of every cranky man who comes to your barn. Don't get ill tempered and kick and abuse your sick animal; he is dumb and perhaps in great pain, and a rough word hurts a sick horse just as sure as it does a sick person, while kindness cheers and strengthens.

SCOURING—(Diarrhœa.)

Caused by sudden changes of food and often by indigestible food, by worms in the intestines, by drinking too much water when the animal is heated, and other causes.

SYMPTOMS:—Purging, the faecal matters are often of a dirty brown color, or clay colored, and smelling badly. If it continues long the animal loses flesh, won't eat, and even glanders my follow.

TREATMENT.

Give 12 ounces of castor-oil and change the food; give no cold water to drink, let it be tepid warm, add two handfuls of flour to the drinking water; if after 12 hours there is no improvement give ½ ounce of laudanum, ½ ounce sweet spirits of nitre, 2 drams tincture of gentian in 2 ounces of water; repeat this every 3 hours, but be careful to let up on the medicine as soon as there is the slightest improvement. Keep the animal warm and quiet, this, and the tepid water with flour, will very often stop most cases of scouring. In severe cases I have had good success with ½ ounce oil of turpentine, ½ ounce tincture of opium, beaten up with four eggs and a cupful of milk; give this once in every 2 or 3 hours till you have given four doses. Some horses are subject to scouring whenever they are driven faster than a walk, such are generally known as washy horses. They should never be put on the road to do fast work.

COLIC.

There are two kinds, Spasmodic and Flatulent. Spasmodic colic may run on to inflammation of the bowels, caused by improper feeding, sudden changes of diet, and many other circumstances, such as a drink of cold water when the animal is heated, worms in the intestines, abscesses, diseases of the kidneys and liver, also from the presence of any irritating substance in the bowels.

When the trouble is in the bowels the symptoms are: Pain, pawing with forefeet, looking at side, kicking with the hind feet. The animal may lie down and rest for a short time, then get up and may eat a liitle. Sometimes he will go down on his knees for a minute then stand up and shake his body.

TREATMENT.

I have, for some time, had considerable opportunity of watching this trouble, and I believe that the best plan is to give a good dose of physic. There is an irritant in the bowels and the sooner it is removed the better. For this purpose give Barbados Aloes, 7 drams,

ginger 2 drams, put in cupful of hot water to dissolve the powder, then put it in drenching bottle, add half cupful of syrup to sweeten, then fill up the bottle with water and give as one dose. If the pains are severe give the following: 1 ounce tincture of opium, ½ ounce spirits of turpentine, 1 ounce sweet spirits of nitre, one cupful warm water; mix and give in one dose. You can repeat this in one hour if the pain is severe. Warm water bathing over the loins and belly is also good, and warm injections per rectum. If the attack is not very severe one dose of the opium and turpentine may give relief.

FLATULENT COLIC.—(Bloating.)

This kind is caused by feeding wheat, boiled food, soaked barley, or anything that is easily fermentable.

SYMPTOMS:—The principal symptom is the swelling of the abdomen; there is often difficult breathing.

TREATMENT.

Give 1 pint of linseed oil, 1 ounce of spirits of turpentine, mix and give in one dose. If the case is bad the animal ought to be punctured on the side to let of the gas; but this operation can only be done with safety by a skilled veterinarian who has an instrument for the purpose. Warm injections per rectum, and warm bathing on the sides and belly is very good in this case also.

A horse attacked with colic in the evening should never be left alone through the night, as the pains are apt to return and the horse die before morning.

Impaction of the Colon.—(Large Bowel.)

This is generally caused by over feeding, especially on dry food containing much woody fibre.

SYMPTOMS:—General abdominal pain, they often push the tail up against the wall; you may often feel the hard mass in the rectum which should be removed by hand. There is great danger of the bowels being ruptured before a free passage is obtained.

TREATMENT.

Dissolve two or three ounces of aloes in a pint of warm water and, after emptying the rectum, inject into the rectum, repeat this after two hours. Change the food.

Impaction of the First Stomach.—(Ruman.)

This is of frequent occurrence in cattle and is caused by the over feeding of especially too much green clover, a commodity not over plentiful in Dakota.

SYMPTOMS:—The animal is bloated, the swelling, when tapped on with the fingers, is dough-like, and the impression of the finger is left on the swelling for some time.

TREATMENT.

The animal should be cut into on the left side, a little behind the last rib, make the opening large enough to admit the hand, and then remove all the food in the stomach. Then stitch the stomach first, and afterwards the skin. It is hardly safe for any but a skilled hand to do this operation, still very often it is the only hope of saving life. In mild cases a good dose of physic will do the work, say aloes 1 ounce; glauber salts, 1 lb.; common salt, 1 lb.; dissolve the whole in two quarts of water and drench the animal.

INDIGESTION.

Caused by improper food, bad teeth, bolting the food, etc.

SYMPTOMS:—There may be capracious appetite, or loss of appetite, sometimes the animal will eat filth and lick the walls. There is usually increased thirst, hidebound, irregularity of the bowels, scurfy skin. There may be a dry cough.

TREATMENT.

Remove the cause, if bad teeth attend to the same; change the diet, see that the animal has moderate exercise, good grooming, and comfortable quarters. Common salt helps digestion in all animals.

Inflamation of the Bowels.—(Enteritis.)

This is a very fatal disease, in fact the most fatal that afflicts the horse. He dies in a few hours after the attack, and it is little use discussing it here, only a skilled veterinarian can diagnose and treat the disease; it generally follows colic.

DIABETES.

This disease is caused by some abnormal condition of the system. It may be through the food, the blood, the kidneys, etc.

SYMPTOMS:—The animal has excessive thirst and urinates frequently; he passes the water as clear as the water he drank. The appetite is good, but he is constantly loosing flesh. The horse will prefer dirty to clean water.

TREATMENT.

Give 1 ounce of the Bi-carbonate of soda in drinking water night and morning for a few days; take Iodine, 1 ounce; Iodide of potash, ½ ounce; water, 8 ounces; mix; give one tablespoonful night and morning for a week. If necessary, after three days recommence and give for another week; but one week's treatment generally stops the disease unless it is far advanced.

CATARRH (Common Cold.)

SYMPTOMS:—The animal may be a little off his feed, sneezing, possibly water running from the eyes, after this there will be a discharge from one or both nostrils. There may be considerable fever and dullness.

TREATMENT.

Keep the animal warm, feed upon bran mashes, boiled linseed, and good hay for some days. Steaming the head is very beneficial; take a bucketful of hot water, put one tablespoonful of carbolic acid in it, hold the head over the water and keep stirring the water with a wisp of hay. Give one teaspoonful of saltpetre in feed twice daily. Put blanket over his head and the pail.

SORE THROAT—(Laryngitis.)

SYMPTOMS: Discharge from the nostrils, difficult breathing, can't drink water, glands on each side of the throat are swollen. There may be no discharge.

TREATMENT.

Steaming the head with hot water or scalded bran in a bag and held up over the nose; bathe the throat with warm water, after which rub in a little of the following liniment: Raw linseed oil, 2 ounces; Aqua Ammonia, 1 ounce; spirits of turpentine, 1 ounce; mix. This will make three applications for both sides of the throat, one each day. If the case is very bad you will have to get a veter-

inary surgeon to put a tube in the throat for a few days in order to keep the animal from suffocating. Feed light, soft food, clothe warmly, and keep him comfortable.

DISTEMPER—(Strangles.)

SYMPTOMS:—There is considerable swelling between the jaws, possibly all over the head, running at the nostrils, he is off his feed, and the head may be so badly swollen that he cannot eat.

TREATMENT.

Steam the head with hot water, or scalded bran and carbolic acid; blister the swelling between the jaws with fly blister; keep patient on soft nutritious food. When swellings get soft open them and keep the parts clean. Should the throat become implicated treat as directed for sore throat.

This disease is generally very simple, but sometimes it takes a very severe form and requires great patience and care to bring the animal through. He may break out in sores all over the head and body.

Stomach Staggers, or Blind Staggers.

SYMPTOMS:—You will first notice the animal dull and sleepy. If you make him walk he staggers and seems as if he was about to fall; there is shivering, he seems frightened. Will sometimes act as if he were to rear up in the manger, sometimes will pull back on the halter. The body is sometimes hot and sometimes cold. There may be violent twitchings of the muscles, staring eyes. This trouble may attack the animal while out in the pasture. He will then ramble about in a sleepy manner until he comes to a wall or fence, when he will stand with its head pressed against it.

TREATMENT.

If this is the first attack of the disease and the animal is in good condition, it will be a good plan to draw from four to six quarts of blood from the juglar vein. Always give the animal a good dose of physic the very first thing; 1 ounce of Aloes and 1 dram of Calomel for the horse, 1 pound of Epsom salts, ½ pound of common salt, and twelve Craton beans for an ox or cow prepared in the usual way. Keep the animal quiet. Give plenty of

water to drink but no food. Bathe the head with cold water. The physic may take two or three days to work. If the bowels do not respond on the third day repeat one-half dose of physic.

Oxaluria—(Doing Badly.)

SYMPTOMS:—The horse has a good appetite, eats well, but still he loses flesh. He is stiff about the hind quarters; he is hide-bound, the skin is scurfy.

TREATMENT.

Give a full dose of Aloes. After the physic has worked give him one teaspoonful of Nitro-muriatic acid in drinking water night and morning; give also powdered gentian, 2 ounces; powdered Nux Vomica, 1 ounce; Saltpetre, 1 ounce; mix; divide into 9 doses, give one night and morning in feed. In this trouble there is also apt to be considerable constipation, the water is not passed regular, and it is often of a light amber color.

LUNG FEVER—(Pneumonia.)

SYMPTOMS:—In most cases there is difficult breathing, the pulse often reach 70 to 80 beats per minute. There is a dull, dry cough, the legs and ears are often quite cold, and sometimes the animal will take on fits of shivering. The animal does not lie down, and if loose he wanders about in a restless manner, sometimes eating a few mouthfuls of food. He generally stands with his fore limbs extended in front and nose protruded; but the last two symptoms are not always seen. If complicated with pleurisy the breathing is more painful, the fever continues for from five to nine days. If there is a change for the better at this time, you will notice the breathing easier, the mouth becomes more cool, the pulse falling several beats per minute, the appetite returns. This trouble is dangerous during two stages, first, during the early fever, and secondly, during the period that changes are taking place in the lung tissue which may produce suffocation; but in this, as in many other diseases, the most you can do is to give the proper treatment at the start, and then call in a qualified practitioner. A horse will hardy ever lie down when suffering from any serious lung trouble, he will stand with his elbows turned outwards. The ox, however,

generally lies down most of the time. Here it may be stated, that the diagnostic symptoms of this, and many other lung troubles, are revealed by an examination of the lungs, which can only be made by a veterinarian.

TREATMENT.

This will apply to several lung troubles where there is much fever at the start. Give the fever mixture. Never try to bleed the animal; give cold water to drink, little at a time and often. If in much pain bathe the sides with warm water, and keep the patient well blanketed; bandage the legs. Keep the animal in a well ventilated box stall if possible. If the bowels are constipated give ½ pint of linseed oil. When the fever is reduced cut off the fever mixture to one-half the dose, or if necessary altogether.

ANTHRAX.

The term anthrax is generic, it applies to a disease that is given different names in different parts of the world. The names also depend on the form in which the disease is manifested in the different animals. The disease appears at all seasons of the year and attacks animals of any age, it is generally the worst amongst stock that are pastured on low lying lands that have been flooded with water.

ANTHRAX IN THE HORSE.

Anthrax in the horse is of rare occurrence, in fact it is so rare that we need not wait to discuss it here.

ANTHRAX IN HORNED CATTLE.—Anthrax Fever, Splenic Apoplexy.

The systoms in cattle is as follows: Sudden loss of appetite, they stop chewing the cud; they are often taken with shivering fits. The animal becomes weak and generally is inclined to lie down. The heart beats violently, the mouth is filled with mucus, a watery discharge from the eyes and sometimes blood from the nose, sometimes the animals are so excited that it is dangerous to approach them. Death takes place in from one to eighteen hours from the time the first symptoms made their appearance. When the disease appears as Black Leg, Quarter Ill, Black Quarter, it most frequently appears in young animals and often kills suddenly, and it generally takes the very best animals in the herd.

SYMPTOMS:—The animal becomes listless, the ears hang down, there is pain on pressure about the ribs and loins, the mouth is hot and dry. Soon you will see enlargement of one or more legs, or about the head, neck and loins. The animal is always unwilling to move, he lies down and is very unwilling to rise; he will eat nothing; the urine is high colored, nearly like coffee; the swellings are cold to the touch, and when handled will sometimes make a crackling sound. The animal now seems unconscious, staring eyes and soon passes away.

SYMPTOMS IN SHEEP.

In many parts of Europe the disease appears as Splenic Apoplexy. Anthrax in sheep is known in Scotland among the shepherds by the term Braxy, striking of blood, etc. Sheep affected with Braxy show the first symptoms in their gait, then they lie down and rise up frequently, the back is arched and the head drooping. The other form which this trouble takes in sheep is Splenic Apoplexy, the symptoms are similar to those of the same disease in the ox.

ANTHRAX IN THE PIG.

There are three forms in which this disease appears in the pig, namely: Anthrax Fever, Anthrax with Tumor, and Gloss Anthrax. The former is very fatal, it destroys life in a very short time, there will sometimes be very slight signs of sickness before death. In mild cases you will notice that the pig is not inclined to eat, he is dull and sleepy, hangs his ears, sometimes he vomits a dirty coffee colored fluid, there may be convulsive fits, he often loses the use of the hind legs and generally dies. Anthrax with Tumor is very rare in the pig; but Gloss Anthrax is more common, especially among pigs that are allowed to eat the flesh of other animals that have died with the disease. It kills suddenly, the throat swells up very large, the tongue, etc., swollen and seems to rot away. Later the animal will have a very bad attack of diarrhœa, often mixed with blood before death takes place.

ANTHRAX IN THE DOG.

The disease is said to attack dogs only after they have eaten the flesh of other animals which have died with the disease. The symptoms are similar to those in the pig.

Poultry take the disease with the following symptoms; Loss of appetite, ruffled feathers, they stagger while walking, their breath smells bad, they also have a bad diarrhœa, they are very weak, sometimes drag the wings on the ground, the bill and comb become black, sores sometimes appear on the soles of the digets, they take fits and die.

Very little can be done for animals suffering from this disease; but we may do a great deal in the way of preventing the healthy from taking it. When the disease breaks out in a herd, and it takes some time to get a veterinarian, we would advise the introduction of seatons in the breast. Put some fly blister on the seaton and work it inside so as to set up inflamation; but in any out-break of this disease no time should be lost in calling a qualified veterinarian. All animals which have died while suffering from this disease should be buried at least six feet deep or their carcasses burned to ashes.

Diseases of the Kidneys.

The domestic animals are not so liable to disease of the kidneys as the human family. There are, however, a few kidney troubles with which the veterinarian has to deal.

Retention of Urine—(Stoppage of Water.)

Symptoms:—The stoppage may be partial or complete. The animal often tries to pass water by stretching out his limbs, he will groan with pain and possibly pass a few drops or he may not be able to pass any.

TREATMENT.

Very often by passing the hand into the rectum and with the open hand pressing firmly, but not too heavy, on the bladder you will cause the water to pass off; but care must be taken not to injure the parts with the finger nails. If the sheath is dirty wash it out with warm water and castile soap. If the water has to be drawn by instrument it will have to be done by a veterinarian.

Incontinence of Urine—(Dribbling.)

This is a continual flow of the water, and there is some serious cause requiring the attention of a veterinarian. In all kidney and bladder troubles it is almost impossible for any but a qualified

veterinarian to determine the seat and cause of trouble. The most that can be done is to do what you possibly can in the way of relieving pain. Sometimes a horse is taken suddenly with stoppage of water, he will paw, lie down, stretch out, look at his sides, etc., In such cases give the animal 1 ounce tincture of opium, 1 ounce sweet spirits of nitre in a cupful of water; if not better in an hour repeat the dose. Bathe the loins and back over the kidneys with tepid warm water and blanket him well to keep warm. Try to press on the bladder gently as directed above.

PURPURA.

Generally caused by bad ventilation, bad drainage, or it may follow some other weakening disease.

Symptoms:—Generally the first symptoms are pain and swelling in one or more of the animal's legs, after a day or two it increases. Sometimes there are purple spots inside the nostrils and lips, very often the lips and head swell up very large, also the sheath, belly and breast are much swollen. These swellings terminate very abruptly as if a cord had been tied around the part. Small sores about the size of a pea are often seen on the legs. These break and discharge thin watery fluid. There is often a discharge of a dark colored fluid from the nostrils.

TREATMENT.

Remove the animal to a warm, healthy place, where no bad smells exist. Give the animal 1 pint of linseed oil to move the bowels. Take tincture chloride of iron, 1 ounce; spirits of turpentine, 2 ounces; water, 6 ounces; give two tablespoonfuls of this mixture three times daily till done, feed on soft food, and put one teaspoonful of the chlorate of potash in his food twice a day for three days. If the head is much swollen take a sponge and bathe with cold water and vinegar, equal parts, continue the bathing for some time. If the swelling does not go down try warm water next. Sometimes recovery from this disease is very slow.

PINK EYE—(Rheumatic Influenza.)

Symptoms: High fever, pain and swelling of the legs, the eyelids are swollen, copious discharge of tears from the eyes, the inside

of the eyes have a pink color, sometimes a loud cough. This disease generally runs its course in about seven days.

TREATMENT.

If there is loseness of the bowels it will help the case, if not give 4 drams of Aloes dissolved in half a pint of warm water, adding some molasses to sweeten, give this in one dose. Give the horse one teaspoonful of saltpetre in drinking water, or food, three times daily, bran mashes are best. For the fever give Tincture of Veratrum Viride, 2 drams; Fluid Extract Belladonna, ½ ounce; Carbonate of Ammonia, 1 ounce; water to make 8 ounces: give two tablespoonfuls three times daily, but when fever is reduced stop this medicine. If eyes are much swollen bathe them with the following wash: Sulphate of Zinc, ¼ onnce; 1 pint water. Use a sponge to bathe the eyes with.

CHRONIC CATARRH.

SYMPTOMS:—There is a continual discharge from one or both nostrils owing to the formation of pus in the synuses of the face. Sometimes the bones of the face below the eyes will bulge out. caused by the pressure of the pus inside. In such cases no time should be lost in having the face trephined by a veterinary surgeon. There is generally a perfect cure after this operation.

THRUSH.

This is a disease of the frog of the foot. There is a black watery discharge smelling badly, very often the horse is lame. It is caused by standing in a wet place, or allowing manure to remain about the frog and sole. If it continues long it is apt to run into canker of the whole frog and sole, which will have to be cut out and allow a new sole to grow.

TREATMENT.

Clean the cracks around the frog and apply a little Calomel to the parts. Take your knife or a small piece of wood and smear the powder down in the cracks. Do this once a day for three days, then dress the frog with equal parts of Barbadoes tar and soap liniment and the trouble will soon disappear.

LAMENESS

There are two ways in which we may determine whether a horse is lame. First, by moving him so as to find out which limb is affected, secondly, by manipulation with the hand so as to locate the cause of lameness. If a horse is lame in a fore limb he will generally stand with the foot pointed; but pointing the foot must not always be taken to indicate lameness, a horse will often point the food when he is resting. If lame in a hind limb the leg will either be flexed, or putting the toe lightly to the ground or carrying the foot off the ground altogether. With severe pain in both front feet, as in founder, the hind feet will be placed well under the body in order to take the weight of the body off the front feet, and he will frequently throw up his head and sway the body back on the hind feet, the front feet being extended forward. If the pain is in both hind feet he will stand with both front feet extended backwards in order to take the weight of the body off the hind feet and will keep lifting the hind feet alternately. Many kinds of lameness is best seen when the horse is trotting. A horse suspected to be lame should be trotted out of the stable, as very often the lameness may disappear after he walks even a few yards. To treat a lame horse satisfactorly three very important points must be understood. First, the lame limb; second, the cause of the lameness; third, the extent and nature of the cause. Without these three points settled there is sure to be considerable guess work in the treatment.

SHOULDER LAMENESS.

There are several forms of shoulder lameness. There may be disease or injury of the shoulder joint, or it may be a sprain of the muscles, or the bursa, or sheath of the tendon of the flexor Brachai muscle. Very frequently the cause of shoulder lameness is located in the round bellied muscle that winds around the point of the shoulder. By manipulating the muscle with the hand the horse will flinch. Sometimes there is an abscess formed behind this muscle, and frequently it has to be cut into and the contents allowed to escape. If the lameness is caused by a sprain, the best treatment is rest, cold fomentations for a day or two, then apply the sprain liniment, or if necessary the fly blister. In shoulder

lameness the horse will always swing the foot of the lame limb outwards, making a sort of circle when he is trotting. To see this you must stand in front of the horse as he comes trotting towards you.

CONTRACTED FEET.

There are two kinds of contraction, pure and mixed. In a case of pure contraction the horse is not lame, and if so, steps ought to be taken to remove the contraction. The best treatment is to shoe the horse with tips instead of whole shoes. Let the horse stand in a clay puddle for two hours daily, but allow him to lay down at night. Contraction of the foot is not a disease, but the result of disease. When a horse does not put all his weight on the foot from some cause or other, the foot becomes contracted; or bad shoeing will cause the foot to become contracted.

The treatment of mixed contraction is a more difficult matter. In this kind we have lameness and inflamation. The first step is to find the cause and remove it, at the same time treat the contractions. If the lameness is in the foot or coffin joint it may be detected by lifting the foot and pressing with the thumb in the hollow of the heel directly upon the joint. In such a case as this it is a good plan to reduce the inflamation by the use of cold fomentations, after this apply fly blister around the coronet. After the blister is worked off put on tips and let the horse run in a soft pasture for a month or two if possible.

CORNS.

Whenever your horse is lame and you cannot locate the trouble, it very often happens that a corn is the cause of lameness. Have your blacksmith cut down in the heel between the wall and sole, and if a corn be the cause of lameness he will find it, but sometimes they are very deep.

STRAINS OR SPRAINS.

An injury inflicted upon a ligament, tendon or muscle. If a muscle there will be pain and swelling, by laying your hand on the part it will be warmer than other parts of the skin, if not arrested the muscles of the part will waste away (sweeny). If in a ligament the inflamation is apt to affect the joint so that the latter may become stiff.

TREATMENT.

Give perfect rest. Bathe first with warm water a few days, then with cold for a few days, then apply the sprain liniment well rubbed in once a day for a week, after which apply the fly blister. Keep the bowels loose with Aloes. If there is much fever and loss of appetite give the fever mixture to reduce it.

SHOE BOIL.—(Capped Elbow).

Caused by bruising the part while lying on the heels of shoe or hoof.

TREATMENT.

When it first appears soft and full of water open it at the lowest part so as to let your finger into the opening. After letting the contents of the sack escape take 1 ounce of white vitriol in one pint of water, inject some of this into the sack once daily. Put a pad around the foot, or rather pastern, so as to keep the heels from the elbow when the animal lies down.

STIFLED.

The cap slips out of its place. When this happens the horse stands with the leg stretched out behind him. He can't bring the leg forward in line with the other.

TREATMENT.

Put a strong strap around the pastern and a strong collar on the horse's neck; then take a rope, tie to the strap, stand close up to the horse's shoulder, let one man hold the horse's head and two take hold of the rope and pull the foot forward until the cap slips into place. This can be done sometimes without puting your hand to the cap. When out of place it always slips to the outside. Tie the rope to the collar, keeping the foot about one foot in advance of the other hind foot. Then apply the fly blister all over the stiple; after two or three days take off the rope; let the animal rest for at least two weeks.

SPRAIN OF THE FETLOCK JOINT.

This is a very rare disease, though often talked about. There are many injuries to the tendons and bursa but seldom to the joint proper. Inflamation of the bursa, which is placed at the back of the fetlock, forming a groove over which the tendon plays.

Both the tendon and cartilaginous pad are apt to be injured, and cause severe lameness.

SYMPTOMS:—The horse often goes on his toe; there is heat at the back of the fetlock, also swelling. This swelling is firmer to touch than ordinary windgalls.

TREATMENT.

Put on a high heeled shoe in order to rest the parts; when severe, and in the hind leg, the animal should be put in slings. Constant application of cold water is necessary to reduce the inflamation. If there is any enlargement left apply the Red Iodide of Mercury blister a few times.

RINGBONE.

Give perfect rest, put wet swabs on the part for several days, then apply fly blister. If this does not do have it fired by a veterinary surgeon; but if taken early the above treatment is apt to be successful.

BONE SPAVIN.

Treat same as ringbone.

SPRAIN OF BACK TENDONS.—(Sinews.)

This is more apt to occur in draft horses than any other breed.

SYMPTOMS:—The tendon will often be swollen and hot, when you pinch the parts the horse will flinch.

TREATMENT.

High heeled shoe to rest the tendon; perfect rest for a long time; bathe with cold water, putting plenty of salt in the water. If inclined to contract the tendon and throw him over on the knees, apply fly blister all the length of the tendon. Use sprain liniment before blister.

PUFFED HOCKS.

Many young horses have enlargement on the seat of bog spavin. Unless there is pain, on pressure, or lameness, we would advise letting it alone, with the exception of giving frequent cold water bathings.

CURB.

This is an enlargement on the back of the hind leg below the point of the hock.

TREATMENT.

One or two applications of fly blister will remove the lameness and enlargement if taken early. High heeled shoe is advisable.

CAPPED HOCK.

An enlargement on the point of the hock.

TREATMENT.

High heeled shoe; cold water to reduce inflamation, then apply fly blister.

COLLAR GALLS AND SORES.

Badly fitting collars often cause much pain to the horse and trouble to his owner.

TREATMENT.

If an open sore apply the healing liniment. If there are hard tumors they ought to be cut out.

FOUNDER.—(Laminitis.)

This is an inflamation of the feet and is of two kinds. The symptoms of both are alike, but the one yields to treatment sooner than the other.

SYMPTOMS:—You go out to the barn, possibly in the morning, and find the horse standing as if his whole body was cramped; he is panting with pain. If in the front only, he stands with the feet outstretched, will sometimes sway his body back, putting his weight on the heels for a few seconds. If you try to back him he will sway back but is very unwilling to move the front feet. If the inflamation is in both the front and hind feet he will stand with all the four feet under the body. The disease is especially severe in heavy draft stallions; but in the majority of cases, if you persevere with the treatment, you will overcome the trouble.

TREATMENT.

Put the horse's feet that are affected into a hot water bath. Let the water be just warm enough to be comfortable for your hand, as hotter than this will take the hoof off; let him stand in the water for one hour. Have enough water to cover the foot up to the pastern. If there is much fever give him ten drops of the tincture of Acouite Root every hour for four or five hours. If there is much pain give him one-half ounce of Tincture of Opium

for the same length of time. After taking the feet out of water put warm bran poultices on each foot, and change the poultices at least three times daily. Use the water every night and morning so long as the pain is very severe. Keep adding a little warm water and taking out the the cold when he is standing in the tub. If the bowels are constipated give the horse a mild dose of linseed oil; but never give aloes in severe cases. After the horse begins to walk on his feet get bar shoes put on, and then stand him night and morning in cold water. I once had a stallion that could not stand on his feet for any length of time for four weeks. In such cases keep a good, deep bed of straw, and turn the horse at least once every day. Be kind and attentive in dealing with this trouble and you will be successful with most cases. This is one of the most severe troubles that afflicts the horse.

OPEN SORE NEAR A JOINT.

This kind of injury often happens and is very dangerous. If neglected for some time the joint will swell, the animal will not be able to walk owing to the severe pain. There is apt to be a loss of appetite, and, by and by, the joint oil, a clear visid fluid, is apt to escape.

TREATMENT.

If there is any foreign body in the wound it will have to be removed. Should there be pus discharging from the wound we would advise a fly blister all around the joint. This will cause swelling and closing of the lips of the wound. Two days after the blister use the following ointment: Powdered Opium, 2 drams; Tannic Acid ½ dram; Benzoated lard, 1 ounce; mix, apply to the wound once daily. If there has been no discharge and it has not been blistered use the ointment from the start. Give Aconite and Opium to alley the fever and pain, as recommended in Founder.

BROKEN BONES.

There is a belief prevailing that when a horse breaks his leg he ought to be shot. This is a mistake. I have had a good many colts and some work horses with the cannon bone broken in two and every case has made a complete recovery. The last case I had was that of a sucking colt. While in the pasture he was found one day with the front leg broken about two inches above fetlock joint.

TREATMENT.

Take two pieces of thick sole leather, cut them to suit the parts of the leg, one on each side so that the edges will meet. Then put the leather in hot water so as to make it pliable, then put them on the leg, over these splints wind a cotton bandage about four inches wide, begin at the bottom and work upwards. Use plenty of flour paste on the bandage every turn you take. When this dries it will be solid enough to keep the broken bones in position. Should you find the bandage getting slack after the swelling in the limb is reduced, take it off and reapply. You will have to lay the colt on his side when putting on the bandage, and tie the other three feet together, after which let him up but keep him in a loose stall. He will not use the limb till it has become united. If the horse has been broken to harness it will be a good plan to put him in slings. In about three months you can take off the bandage, then the animal will use the leg pretty freely. Fractures of the pastern bone is also curable; but fracture of most other bones, except the shoulder blade, are very seldom amendable to treatment.

SPLINTS.

This is a small, bony enlargement on the inside of the fore leg just below the kness. It is very sore and causes lameness.

TREATMENT.

Apply the Red Iodide of Mercury blister well rubbed in. If necessary repeat the blister after twenty days.

POLL EVIL.

First appearance is swelling on top of head behind the ears.

TREATMENT.

Apply fly blister to the swelling, when you find a soft spot open it, make the opening quite large, and at the lowest point possible, then apply the healing liniment once every day, If it does not heal up there may be a pipe formed, and it may be necessary to have a veterinary operate on it.

FISTULOUS WITHERS.

Caused by collar or saddle. Is of the same nature as Poll Evil and requires the same treatment.

GREESE LEG.—(Water Farcy.)

This is generally found in draft horses. The legs (hind) swell, and sometimes little pimples will break and discharge a watery fluid.

TREATMENT.

When it first appears give the horse a dose of Barbadoes Aloes; wash the legs with warm water. If there are any sores on the legs take a little White Vitroil. (pulverized), and rub it amongst the little sores once daily for a few days. Feed the tonic powder after physic has worked.

OPEN SORES.

There are a great many horses cut up on barb wire, and I have letters from all over this state asking what to do in order to heal up these sores.

TREATMENT.

Take the animal into the barn. If any important blood vessel has been cut, take up the artery, or bandage the part for a day to stop the bleeding. If any large amount of flesh is hanging loose put some stitches into the parts to hold them together. Generally the most troublesome cuts are about the limbs. Keep the animal quiet, and the parts clean. Apply the healing liniment to the sore once daily with a syringe. Never put a bandage on a sore, unless just for a day or two to stop the bleeding; bandages on sores does much harm.

CRACKED HEELS.

This is a very common trouble in the horse, and may be produced from different causes.

TREATMENT.

There is nothing better for sore, cracked heels and picket rope burns than the Oxide of Zinc ointment. Take Oxide of Zinc, 2 drams; Benzoated Lard, 1 ounce; mix, apply to the parts once daily. The healing liniment is also good for cracked heels.

SKIN DISEASES.—(Mange.)

This is a skin disease that attacks the horse, ox, dog, cat, sheep and pig.

SYMPTOMS IN THE HORSE:—There are several kinds. One kind appears on the neck and withers and may spread over the body. You can feel small hard, lumps on the skin, the scab on each is easily removed. Large patches of hairless skin may appear on some places. The skin may lie thick and wrinkled. Another kind appears on the legs; but this kind does not itch so much as the others. The third is mostly seen about the tail and upper parts of the neck. The little lumps are higher in this kind and not so round. This kind is not so difficult to cure as the first. The symptoms in cattle are similar to those of the horse.

In sheep there is itching of the skin, patches of wool will fall off. By examining the skin you will find little red pimples; it first appears sides and back.

TREATMENT.

Always remove those affected from healthy stock. Each sheep should be dressed by the application of spirits of tar, or tobacco juice. Watch the animals closely, as you may require a second application. Horses, cattle, dogs, cats and pigs should be washed with soap and warm water before applying any remedy. After bathing apply the mange liniment well rubbed in with the hand; two days after rub in the liniment a second time. This is a very contagious disease.

LICE.

The only sure plan is to clip off the hair, if it is long and apply one of the following remedies: Powdered seeds of Staves-acre, 1 ounce; water, 1 pint; wash the parts with this. The Dalmatian Insect Powder forced in amongst the hair with a blower will often kill them. Many people use a weak solution of a good sheep dip. A solution of tobacco is good. Any of the above remedies will kill lice if the remedy is made to reach the parasite. Keep the animal from licking the medicine.

TICKS

Are found on the skin of cattle, horses, sheep and dogs. You often find them sticking fast to the skin, at other times they are loose. The oil of turpentine will always kill them; when sticking fast to the skin clip off the body and there is no more trouble.

The sheep tick is of a reddish color. They will live for over a year on the fleece after the animal is shorn; easily distroyed by using any good sheep dip.

MAGGOTS.—(The Fly.)

These are very troublesome to sheep during very warm weather. They generally appear about the tail and hind quarters, especially when the animal is dirty. Sores of all kinds are apt to contain maggots during warm weather. Linseed oil, two parts, and oil of turpentine, one part, mixed, will always kill maggots. Cleanliness and antiseptics will always prevent their appearance.

Care of Pregnant Animals.

This is one of the most important matters affecting stock-owners. If you have a brood mare and wish her to bring forth a live, healthy colt, you must attend closely to the health and comfort of the mother. Moderate exercise is most essential to the pregant animal; let her have some exercise every day. Feed her on good, nutritious food, for, you must remember, that in addition to her own needs she has to supply, through her system, the requisite material to build up the bones, muscles, etc., of the coming colt. Keep the mother in a healthy, well ventilated stable, where there are no bad smells and nothing to frighten or annoy her. Through overlooking such important matters many fine animals have been caused to part with their young prematurely, thus not only endangering their own lives and usefulness, but also that of all other pregnant animals coming in contact with them.

ABORTION.

When any animal has aborted, (slipped her colt or calf), you should at once remove them from the presence of other animals, as this trouble is apt to spread to other pregnant mares and cows. Possibly the best plan is, to remove the sick animal from the healthy when you notice the first symptoms of this sickness.

TREATMENT.

Keep perfectly quiet, give sloppy food, and disinfect the premises with chloride of lime or carbolic acid. When the pains first appear give her one ounce doses of Tincture of Opium and twenty

drops Fluid Extract of Belladona in a little warm water or gruel. Give this every hour for two or three hours if she is in much pain.

PARTURITION.

When the mare, or cow, is about to give birth to her young, they should be very closely watched; when the time has arrived the most casual observer will know. Animals that are well kept seldom have any trouble, still accidents will occur. You will soon notice if things are not all right, and if there seems to be a hitch lose no time in making an examination. See that your finger nails are pared down to prevent scratching the parts. Grease the hand and arm, pass it in and see what is wrong. If a foot has gone to one side put it right; if the head is not straight bring it around. These little things done, before the mother has strained and forced it tight into the breech, may be the means of saving the mother's life. If you find that the young one is partly turned around and the mother is straining hard, get plenty of help, tie the four feet together, then hold the animal on her back while you pass your hand inside and turn the young one in proper position, when it will come away all right. If the young is dead, it may be necessary sometimes to pass a loop of a clothes line around the feet or neck. If this is done grease the rope and pull gently, only when the mother strains. Where there is much work like this give the mother Tincture of Opium in two ounce doses about one hour apart. After you are through give her Sweet Spirits of Nitre, one ounce; Alchol, three ounces, in a little warm water. Repeat every hour if the animal is weak, for a few hours at least.

CARE OF SUCKLINGS.

No man can have any idea of the large number of valuable colts and calves that are lost through the carelessness or ignorance of those in charge. There is no time in the history of an animal's life that so much care is needed as during the first few days of its earthly existence. If you should have to cut the naval string, before doing so tie a silk thread around it about three inches from the belly; then cut below the thread. If you find the cord broken and water or blood is discharging from the same, tie it at once.

If the young one is weak help it up, in order that it may get started in its new way of feeding; or if necessary, from any cause, milk the mother into a bottle, with a rubber tube and nipple, and let the little one suck it from the bottle. If it should turn out, after a day or so that the bowels are constipated, (bound up), give it one or two tablespoonfuls of castor oil. Feel with your finger, per rectum for the little hard pellets; give warm injections to soften them. Take a large, blunt pointed knitting wire in one hand and pass it along with the finger of the other hand, and in this way you will be able to work the pellets loose and bring them out slowly. This will all take time and patience, but will generally result in saving the life of the patient.

Scouring is another trouble that sucklings are very liable to, and in two or three days, if not stopped, will end in the death of the animal. Whenever you notice a colt or calf scouring, lose no time in giving a dose of castor oil. This acts in two ways; it first removes the cause of irritation, and the secondary effect is that it binds up, so that very often, when the oil is given in time, no other medicine is required. But should the trnoble continue more than twelve hours after you have given the oil, you should go on with the following treatment, and so soon as there is signs of improvement reduce the doses to one-half or possibly altogether: Spirits of Camphor, 10 drops; Tincture of Opium, 1 dram; Sweet Spirits of Nitre, 1 dram; mix, give in one dose in a little starch gruel, two hours between each dose. One tablespoonful of lime water in five of milk is good. If the discharges are grey colored give the following treatment: Tincture of Rhubarb, 1 dram; Tincture of Catechu, 1 dram; Camphorated Opium, 1 dram; Lime water, 2 drams, mix, put in a little tepid water and give in one dose. Always be careful not to bind up too suddenly by continuing full doses of the medicine too long. The above doses are for a colt under four weeks of age. Calves of that age will require double the dose; lambs one-third the dose of that given to the colt. Dogs one-fourth the colt's dose.

CRACKED TEATS.

This trouble very often happens in the cow. The best treatment is to apply a little carbolated oil to the teat twice daily. The healing liniment is also good.

CAKED BAG.

Bathing with warm water and salt is about the best you can do. After the bathing dry the parts and rub in fluid Extract of Belladona around the neck of the teat. If the milk does not pass through the teat, a milking tube should be put into the teat. Draw the milk from the swollen quarter several times a day.

To Remove the Afterbirth.—(Placenta.)

If the afterbirth does not come away within twenty-four hours, tie a two pound weight to it, this will help to take it away. If after half a day this does not help matters, then oil your hand and arm and pass in your hand as far as possible and by gentle manipulation you can unbutton the afterbirth from the womb. Before doing this dress your finger nails, in order to prevent any scratching of the parts; with care and courage you will be successful.

RUPTURES.

This often happens in young colts, but generally disappears before they are a year old. Should it remain longer without getting smaller it will require an operation; but the application of a small, round pad, held in place by a surcingle very often assists the parts to heal over. It may happen on the naval opening, further forward, or in the scrotum.

SAND CRACKS.

These may appear on any part of the hoof, in front or behind, but it is most often found on the inside quarters of the fore feet. When on the hind feet it is generally found in the front of the hoof. If the crack is deep, and it causes lameness, the parts ought to be well cleaned to the bottom of the crack. This will allow the escape of pus and any dirt that may have gathered there. If there is a formation of proud flesh in the crack, don't try to destroy it with caustic medicines as that will make it worse. After paring down the edges of the crack, bathe the parts with warm fomentations. When the pain subsides, have a bar shoe put on the foot. Take a piece of iron about one-half inch wide, and about the thickness of a dime, make the iron red hot, sink it into the coronet

between the hair and hoof about one-eighth of an inch deep. This is done to cut off the crack from the new wall which is continually growing out from the coronary band. Then take some fly blister and rub it well in around the coronet, and let the horse rest if possible.

INJURY TO THE EYE.

Very frequently an animal, especially the horse, gets an eye injured, and as a result you will notice a white film gradually spread itself over the eyeball.

TREATMENT.

Bathe over the eye on the outside with warm water and salt; one teaspoonful of salt to a cupful of water. Apply the following lotion to the eyeball with a camel's hair brush once every day: Nitrate of Silver, 7 grains; Sulphate of Atropia, 3 grains; Distilled water, 1 ounce; mix. Apply a little of this to the white surface once a day with a camel's hair brush. This will always take off the film and causes no pain to the animal. Avoid putting sugar, ground glass and such like into the eyes.

FUNGUS GROWTHS—(Proud Flesh).

This is often found about wounds on the legs or feet. They are the tissues of the part, and should not be interfered with, as they generally disappear when the inflammation subsides. When after waiting some time you see a whitish, flabby looking growth in the mouth of the wound, and there is a thin watery discharge from the part, then it may be necessary to take it off. The best way is to apply the stick Nitrate of Siver, (Lunar Caustic) to the parts once every two or three days, this will generally cause the sore to heal up by removing the fungus.

SORES IN THE MOUTH.

These are very often found in the corners of the mouth, caused by the bit.

TREATMENT.

Slacken the bit, apply the following to the parts twice daily: Sulphate of Zinc, 2 drams; Tannic Acid, 20 grains; Tincture of Myrrh, 2 drams; water to make 4 ounces; mix.

WORMS.

When you see the white deposits around the rectum, and the horse rubs his tail against the wall, this indicates that it is the small pin worms in the rectum. For this take one ounce of Aloes, dissolve in one pint of warm water; add one ounce of Spirits of Turpentine, and one pint of water making a quart mixture. Inject this into the rectum, and if not kept there one or two hours repeat the dose next day. If the worms are larger and are frequently passed from the horse in the faeces, give the following powder night and morning in his feed: Sulphate of Iron, 1½ ounces Tartar of Antimony, 1 ounce; Linseed Meal, 2 ounces; mix, give one tablespoonful in feed. After this give full dose of Barbadoes Aloes. In a few days you can give another course of the powders. For colts 1 to 3 teaspoonfuls turpentine, in a little milk every morning before feeding for three or four days. Feed 1 tablespoonful of charcoal in feed, and allow plenty of rock salt; if animals are properly fed and allowed plenty of rock salt they will very seldom be troubled with worms. Turpentine is much better than Savin for killing worms, and it is much safer for the horse.

COUGH—(Heaves).

Colts from three to four years of age are often troubled with a cough called a dental cough. It is caused by certain changes going on in the teeth; when these changes are completed the cough disappears. There are many other kinds of cough, such as the cough of pleurisy, pneumonia, bronchitis, etc. For a chronic cough, such as you find in horses troubled with heaves, give 25 grains of powdered Digitalis; 25 grains of powdered Opium, and 25 grains Gum Camphor; mix, give in one dose night and morning for a week, or give the following: Powdered Elecampane, ½ pound; powdered Gentian, ¼ pound; powdered Lobellia, ½ pound; powdered Ginger, 4 ounces; mix, give two tablespoonfuls in feed night and morning. Restrict hay and dampen it. The above will relieve the trouble. Heaves is an incurable disease.

GLANDERS and FARCY.

This is one and the same disease appearing in different forms. It is the most fatal disease that the horse is subject to. It is also

transferable to man, to whom it is sure death within two or three weeks. It is also transferred to sheep, goats, dogs, cats, mice and rabbits. Cattle, pigs and poultry will not take the disease. The disease may originate spontaneously in the horse, ass and mule. The real cause of this disease is not clearly understood; but it often appears in old horses. Bad food, overwork, badly ventilated stables and general bad management will cause the trouble to appear. The disease may appear in any one of four forms as follows: Acute Glanders, Chronic Glanders, Acute Farcy, Chronic Farcy. A horse suffering from Diabetis for some time is very liable to become glandered. The discharge taken from the nose of a glandered horse, when introduced into the system of a healthy horse, may produce Glanders, or Farcy, or both; and Farcy will always run into Glanders if the animal is allowed to live long enough, then the horse would be both Glandered and Farcied.

ACUTE GLANDERS.

There is increased temperature of the body, there may be fits of shivering for a day or two; then there is a watery discharge from one or both nostrils, the lining membranes of the nostrils are much inflamed, and small ulcers appear on the membrane; but the shivering fits are often not readily observed. There is often palpitation of the heart; the appetite fails; the animal loses flesh rapidly; the glands between the jaws become large and swollen, sometimes they burst open and discharge. The eyes are weak and watery; the nostrils may he swollen, there is a copious discharge from the nostrils, it sticks like glue around the nose, which impedes the breathing; there may be a bloody discharge from the nostrils. The urin is pale colored and much of it passed, and the animal wastes away for six or eight weeks and then dies.

CHRONIC GLANDERS.

There is a discharge from one or both nostrils, when one, it is generally the left. The glands between the jaws are hard and swollen, very often adhering firmly to the jaw bone. These glands are sometimes large and then get small, and then after awhile get large again. The horse eats well, feels well, and appears perfectly healthy. The glands may enlarge and get small again, and so on for some time before there is any discharge from the nostrils; but

the lining membranes of the nostrils will be paler in color than natural, it will be more of a lead color. When one nostril is affected, the eye on the same side will often be weak, with a watery discharge. A horse may appear all right to the casual observer for even six or eight years and be glandered all the time. Not only that, but he will inoculate other horses, and they may take the disease in the acute form and die in a few weeks. In this climate where we have a cold, dry, bracing atmosphere, we see very little of this disease in the acute form; hence the greater need there is, for keeping a close watch against outbreaks of this destructive, deadly disease, notwithstanding the cry of false economists, both legislators and others, against the state spending any money for such work.

ACUTE FARCY.

Very often the first signs are fever, loss of appetite, and swelling of the legs, generally one leg. Small pimples will form on the inside of the thigh or arm, or possibly all over the limb. These burst and a watery discharge, sometimes yellowish, it runs for a short time, then dries and a little scab forms over the part, and fresh ones break out in other parts of the leg. Farcy may first appear by the horse becoming lame as if it was rheumatism in some part. It may disappear and reappear in some other part of the body; but the disease is manifested in such a variety of ways that only the most careful examination can detect it in the early stages.

CHRONIC FARCY.

This differs from the acute form only so far as it is not so severe and lasts longer, and may possibly be stopped if taken at the start. The first step in its treatment is good, nutritious food, and the administration of tonic medicines. Give the tonic powder No. 1, also give four grains of Arsenious Acid, with one dram of Nux Vomica daily for four or five days; or give one and one-half ounces of the Hyposulphite of Soda in every meal for two weeks. This may be given in connection with the tonic powder instead of the Arsenious Acid. Touch the ulcers with the Lunar Caustic once daily for a few days. When Glanders has once been in a stable great care should be taken to disinfect the premises. All loose boards, mangers, harnesses, etc., should be removed. All

fixtures should be scraped, painted and lime washed, the wash to contain at least one pound of Carbolic Acid to each pailful of the wash. Give all horses about the premises two drams of the Chlorate of Potash, or one and a half ounces of the Hyposulphite of Soda in every meal for two or three weeks. Be very careful in handling a horse supposed to be glandered, do not allow the fingers too near your mouth, or nose, after being in contact with the horse until you have thoroughly washed and disinfected your hands. Never let a horse, supposed to be diseased, eat out of the same box, drink out of the same tub, wear the same harness, nor stand in the same stall as do healty horses. Never buy a horse that has been exposed to Glandered horses, or has any enlargement of the glands between the jaws or any discharge from the nostrils. Traders will always say that the horse has just got a cold; but your best plan is, to let him get rid of the cold before you buy him.

THE TEETH.

There is no part of the horse that requires more attention than that of the teeth. With bad teeth the food cannot be properly digested. In many horses the lower jaw is so much narrower than the upper, that the inside edge of the lower grinders, and the outside edge of the upper grinders, become very sharp. Sometimes the cheeks and tongue become lacerated as that the animal cannot eat. At other times the unshed crowns of the milk teeth are embedded in the jaw over the new tooth. If the teeth are sharp they must be filed. If the old crowns are the cause of pain, they must be removed. If the tooth is split, the loose portions must be removed. If there is an ulcerated tooth, causing a discharge from the nostril, it must be removed. If there are wolf's teeth remove them, as they often cause irritation; but wolf's teeth never affect the eyes as is generally supposed.

BOTS.

These little pests are very troublesome to the horse, ox and sheep, but attack each class of animals in a different way. In the horse the gadfly attacks the animal in summer, during the warm weather. The fly deposits its eggs on the hair, about the breast and fore legs, as these parts are easily reached by the horse's

mouth. When the horse licks the parts where the eggs have been placed, the warm moisture of the tongue hatch the ova, and in a very few weeks after this the larva make their escape. Then as maggots they are transferred to the horse's mouth, and pass into the stomach with the food or water. Now the larva in the condition of bots, attach themselves to the mucous membrane of the horse's stomach. There they stick until full grown, when they let go their hold and escape with the fæces. When they reach the soil they bury themselves beneath the surface, here they remain for about six weeks; they then emerge from their cocoon in the image of a perfect fly. Thus they pass about six to eight months of their life in the stomach and bowels of the horse.

Sometimes bots are the cause of abdominal pain in the horse; even after leaving the stomach they sometimes reattach themselves to the intestines. It is very difficult to kill the pests; but sometimes a dose of aloes will cause them to let go their hold Turpentine and oil is the best we know of to cause them to let go their hold and be discharged. Feeding an occasional meal of raw potatoes for supper is very good for horses troubled with bots, as such a meal is very distasteful to the bot.

There are several other classes of the gadfly, some of which, deposit their eggs on the lips and nose of the horse. The very appearance of some kinds of gad flies will cause a horse to run away with fright.

The bot fly of the ox goes through the same performance as that of the horse, except that instead of developing in the stomach the fly generally attacks young animals. It lights on either side of the backbone. Here it pierces the skin and deposits one egg in each hole. The egg is hatched in the hole under the skin, which causes small tumors to form along the animal's back. During the insect's growth the head is placed downward, while the tail keeps warbling in the opening through the ox skin, in order to admit fresh air. When the bot is matured it escapes to the ground and becomes buried in the earth for about the same time as the horse bot; after that the cocoon ruptures and the fly is set free, while it, in turn, proceeds to torture cattle in order to produce another generation of its own species.

The bot fly of the sheep goes to work in still another way. It is not the stomach nor the back in which the bot is matured. . The sheep fly is the worst tormentor of them all. It lodges in the nostrils of the sheep. We have seen the poor animals so frightened of these flies that they would push their nose in all kinds of soil and dirt in order to keep the fly from entering their nostrils. Sheep will gather together in groups, with their heads down while fighting the fly. The maggots are deposited here, and the young find their way to the sinuses of the head. Here they fix their hooks and remain until fully developed. The pain thus caused to the poor sheep is most severe, by the inflammation thus set up by the bots. Sheep owners will say the sheep have grub in the head. When the bots are perfectly developed they pass from the sheep by the nostrils, become embedded in the earth and mature in the same manner as do those from the horse and ox.

HORSE NOTES.

If you want your horse to be comfortable in bed, see that you groom him after supper. Clean his feet and give him a comfortable warm bed of straw.

Always speak to the horse before you touch him, especially before you strike him. Tell the horse what you want him to do, if it is possible and reasonable for him to do it, and he does not, then the whip may be admissable. Don't whip a horse when he is doing his best with a heavy load, whipping will only make him so disheartened, that he will not do his best in the future.

Instead of it being a wonder that some mens' horses are often sick, the wonder is, that their horses can ever live with the treatment they get.

When your horse is sick be kind to him, for he appreciates a kind word just as much as you would under similar circumstances.

Ground grain is better feeding than whole grain, as the animal gets a greater amount of nutriment out of the ground .feed. It is bad policy to wet ground feed before feeding for the following reasons: When the food is wet, the animal is apt to bolt it, thus the saliva of the mouth has not acted on the food; consequently the gastic juice of the stomach cannot do its part of the digestive pro-

cess, and the result will be that the horse will become afflicted with indigestion. But when you feed the grain dry, the horse is compelled to triturate it in the mouth, and by so doing the food becomes saturated with the saliva before being transferred to the stomach. The latter organ is then able to take up its own part of the digestive process and accomplish it in the proper manner.

While straw and hay are proper articles of food, alone they are not sufficient to keep an animal in good health. Keeping a horse for a long time on straw or hay alone without any grain must necessarily bring on disease.

The proper color of the mucous membrane of the mouth and nostrils in health is a light red. In disease the color changes. For instance, pink colored in Pink Eye; pale colored is due to a thin, impoverished condition of the blood. It is slate colored when the poison of Glanders is in the system, and yellowish when there is disease of the liver. This rule applies to cattle also.

Breeding stallions should be reduced in flesh in the fall, and in spring it is easily put on again. This is the best plan to keep them in a healthy condition.

If a horse refuses his regular meal of grain, take it away and don't offer it again till next meal time.

A drink of cold water to a horse every two or three hours on a hot day will pay you for the trouble of giving it. It refreshes the horse just as much as it does his driver.

The judicious use of blankets during cold weather has a great deal to do with the appearance of the coat of your horse.

The finer bred the horse is, the slicker will his coat look when well groomed.

If you always treat your horse kindly there will be less danger of his running away, or of his letting you have "one" sometime when you least expect it.

COW NOTES.

Take the chill off the drinking water, and the cow will reward you by giving you more milk.

If you want pure milk, see to it that your cow drinks pure water.

If you feed carrots, beets, turnips and other roots to your cows regularly and immediately after each milking, they will not give any flavor to the milk.

If your cow is sick, so is her milk, and it is apt to make you sick if you drink it.

It is a fact that a scrub cow, well kept, will pay better than the best bred cow badly kept.

Sunlight and fresh air are very important for dairy cows. Take a row of cows kept in a dark place and the same cows kept where the sun will shine on them; this will convince you that sunlight produces milk.

Don't allow boys nor dogs to run a cow, especially when her bag is full of milk. The pain it causes the animal is severe.

If you want to have hornless cows, take the little buttons of the calf with a carpenter's sharp gouge: This is the best way, and causes the least amount of pain.

It has been wisely said: "The man who adulterated food should be in the penitentiary; but the man who adulterates milk should be hung, because milk is used by the infant and the sick."

Cows, as well as horses, are greatly benefited by grooming. Just try the plan and see if it does not pay.

If your cow tries to cast her withers, attend to her at once by raising her up, behind, and letting her down in front. This will prevent the trouble. Standing too low behind is often the cause of it.

If the cow is properly fed and in good condition at calving, there is seldom any trouble in her passing the afterbirth.

We wish all farmers to understand that half bran and half corn or oats, is better feeding than all corn or all oats. This applies to horses, cattle and hogs. It makes a well balanced ration.

Care bestowed on farm stock is one of the best paying concerns we know of, both financially and morally.

The following remedy is very good for badly caked bags: Take 4 ounces of soft water, 3 ounces of Aqua Ammonia, ½ teaspoonful Spirits of Turpentine, 1 teaspoonful of Fuid Extract of Belladonna, ½ teaspoonful Tincture of Camphor. Shake them well together and rub same well into the caked bag. Rub it till the bag gets dry and a little warm. Do this as soon as possible. Then

take the bag between your hands and try to knead it, and thus crush the lumps inside. Milk the parts empty as often as possible. Keep rubbing and milk often. Don't give the animal any grain, feed only hay, and little of that, and avoid letting her take cold.

Keep your good cows so long as they are profitable.

If your family are to be healthy, the milk used must be pure.

If the milk is to be clean the cow must be clean. And in order to have the cow clean the barn must be clean. It must be either clean or dirty from the beginning to the end.

Your cows should be watered two or three times daily in winter as well as in summer. Don't think that they are not thirsty because the weather is cold. In thus neglecting to supply a sufficient quantity of water you help to bring on disease in your cattle.

When you have to use milk from an unknown, or suspicious source, it should be heated to boiling point, before being used. This will destroy the germs of typhoid fever,and also of consumption, which are often conveyed to man through milk of tuberculous cows.

When will our state, county and city boards of health do their duty in regard to this matter of milk inspection and analysis?

It is impossible to get pure milk from cows that are compelled to drink the stagnant waters that lay in pond holes, creeks and dried-up rivers. Milk from such sources has brought swift destruction to many infants, and will continue to do so.

SHEEP NOTES.

Raising good sheep is always profitable. But whether in pasture or shed, they ought to be kept in small groups in order to prevent disease.

One very fatal disease among sheep in Scotland is that known as Sturdy, Gid or Turnsick. We have met several cases of it in Dakota. It is a parasitic disease, and affects the brain of the sheep. It rarely attacks sheep which are not attended by dogs, and the reason is a follows: Dogs are often troubled with tape worms, segments of the worms are passed from the dog in the pastures; said segments are often swallowed by the sheep along with the

grass, the embroyos escape from the ova of the segments, and wander through the tissues of they sheep until they land in the brain. The sheep turns from right to left, or from left to right, according to which side of the brain the parasite is in; he steps high, carries his head high; sometimes the sheep may seem both blind and deaf, and will not follow the rest of the flock. They often fall and cannot rise.

If sheep are to be kept free from this and other diseases, you must destroy the worms that infest your dogs. And when you kill sheep or hogs be careful that bladder and other worms are not thrown in the ways of dogs, for so sure as dogs eat the parasite in raw flesh, so sure will he pass it in some other form, and this taken up by the sheep produce trouble in that animal.

It is both easy and profitable to keep a few sheep on every farm. Before you put your sheep indoors for the winter, be sure that you destroy all the the ticks that are on them, either by dipping or otherwise, as the ticks will keep your sheep poor all winter.

Sheep should never be exposed to storms and especially to sudden changes. They feel it just as much as a man does.

If sheep are properly kept they will yield a large income to their owner. There is profit from three sources, their wool, their flesh, and they improve the soil on which they pasture. Mutton is always in demand; it is easier to digest than beef or pork, consequently more healthy. Eighty pounds of hay, turnips, potatoes, meal, or any other good food, will make as many pounds of mutton as one hundred pounds of the same food will make of beef. A wild flock of sheep is never so profitable as a tame flock. Be kind to the lambs, move about among them daily, handle them, feed them something every day from your hand. If this is done they will grow up to be tame and quiet.

If ewes are well cared for there will be no trouble in lambing. Never assist them unless you see that their own labor is in vain. When there is not a proper presentation, act as instructed elsewhere with the mare and cow.

Old ewes are more apt to have trouble than young ones. It is always best to lift up the lamb and start him to suck. If he is dis-

inclined to drink, rub him over the back and over the tail, when he is standing up. This very often induces him to suck.

If the ewe owns the lamb she will lick him dry; but if she does not own him, you will require to rub him dry, and hold the mother till she allows him to suck her.

It often takes a few days to get the mother to own the lamb. If the lamb is very weak feed it about one teaspoonful of brandy or good whisky in a little cow's milk.

During cold weather you will often go out in the morning and find young lambs chilled, and even lambs a few days old may be found in this state. We have seen the whisky treatment a great help in restoring them to their natural condition. Many lambs have to be reared by hand, which causes a great deal of trouble. They ought to be fed from a bottle with rubber nipple. When about three weeks old teach them to drink out of a pan. If you feed the lamb on cow's milk, try to get the same from a cow recently calved, otherwise the old milk is very apt to kill the lamb. If you are compelled to use old milk add a little sugar and water to it. Always give milk to lambs either fresh from the cow, or if cold warm it a little. Very young lambs should be fed at least seven times daily, between six o'clock in the morning and ten o'clock at night; when a week old four or five times may be sufficient.

CASTRATION AND DOCKING.

Lambs should be castrated when they are about one month old. The best way and the easiest is for one person to sit down on the ground and hold the lamb on its back and between his knees. Letting the lamb's head rest on his breast, while he holds both hind legs, one in each hand. The operator, with a sharp knife, cuts through the scrotum, take hold of the testicle and draw out the cord as much as possible without causing much pain, then cut the cord, when the end of the latter will slip up instead of remaining in the mouth of the wound and forming a tumor. When the latter happens, you must cut the cord over again.

While we condemn cutting the tails of horses and dogs, we believe that in the interests of health and cleanliness the tails ought to be cut off all lambs when they are about two or three weeks old. Lay the tail upon a block of hard wood, take a chisel and hold it on the tail about two or three inches from the body,

then with a sharp blow from the hammer or mallet will do the work. Draw the skin toward the body, over the bones before cutting, so that after the cut the skin will slip back and partially cover the end of the bone. Put a little pine tar over the cut surface to keep it safe from flies.

Begin to feed lambs Indian meal, oil meal or ground oats when they are three or four weeks old.

Lambs should be weaned when they are three and a half or four months old. Remove the lambs from the ewes, feed the latter on dry food in order to dry up the milk glands. Feed the lambs good grass and ground oats. Milk the ewes every night for a week or ten days if they need it. Some ewes will do to be milked once in two or three days. You must attend very closely to milking the ewes if you are to have future lambs well fed by the mother.

In Scotland the Shepherds used to wash the sheep in a running stream about two weeks before shearing time. This practice is now becoming unpopular. Washing is both dangerous to the health of the sheep, and it also opens the way for an outbreak of contagious diseases, especially scab and foot rot.

It is very important to protect sheep from storms after shearing, as their skin is very easily penetrated by rain, soon after shearing.

During the winter months the poorest of the flock should always be put in a place by themselves and fed better than those that are in good condition. They must all be kept in a comfortable shed, with good ventilation and perfectly dry. Regular feeding of sheep is very important. They should be fed three times a day. They don't like to eat in the dark. Give them their supper so as to allow them to eat it before dark. As far as possible allow sheep to have free access to pure water both winter and summer. They should also have free access to salt; comfort and good health demand it. Sheep should have a run in the yard every day in order to keep them in good health. This is very important with breeding ewes, and in fact it is impossible for any animal to bring forth her young in good health and strength without having a reasonable amount of exercise during the winter months. In an another part of this work we refer to some of the diseases that sheep are subject to. There are some others which we will now speak of.

FOOT ROT.

This is one of the most contagious diseases that afflicts sheep, and once it gets started it is very apt to destroy the whole flock in a very short time.

Whenever the disease makes its appearance, separate the affected ones from the rest of the flock. The best mode of treatment is to clean the foot, with a sharp knife cut away the horn which covers the diseased parts, as all diesased places must be thoroughly exposed. Then the diseased parts are to be thoroughly dressed with some strong solution of Blue Vitriol, Mercury Nitrate or Carbolic Acid. This work is so very important that in order to have the work so thoroughly done a qualified person should do it. But we will again repeat that on our dry prairies there is no need for an outbreak of this disease if the laws of cleanliness are observed.

SCAB.

This is similar to the itch in man. It causes a great deal of pain, and if left too long will kill the sheep. The little insect that causes this disease burrows under the skin and hatches its young there, the young developes and burrows in a fresh place and hatch their young, and so on till they destroy the sheep.

TREATMENT.

Rub off the scabs with a brush and then dip the animal in a good sheep dip. We think that a good dip is one of the very best applications for skin disease in sheep and other domestic animals. See prescriptions. Short wooled sheep are not so liable to this disease as are the long wooled, and healthy sheep are not so apt to have the disease as are those that are poor and skinny. Sheep raising is a very particular branck of agriculture. The business pays well in a prairie country, if it is properly attended to, but if poorly managed it will be a more losing concern than any other branch of agriculture.

THE DOG.

Some men have no use for dogs, and even go so far as to say that the dog is of no use to man. It is not our purpose, at this time, to enter into a long discussion in defense of the dog and his

usefulness to man. Next to man himself the dog stands at the head of all animal creation for intelligence and faithfulness. Yea, to the shame of our race we must admit that the dog in all ages of the world has often proven to be more diligent in caring for and protecting the weak and helpless than many men who have been created in the image of God. What would the shepherd do without the assistance of the hard working Colie dog? How often do we find the daring Spaniel the means of saving human souls from a watery grave.

How often do we find the noble Newfoundland and Mastiff guarding and protecting their master's property from the robber and burglar by night and by day? Even when man will degrade himself by becoming helplessly drunk, his faithful dog will watch and protect him until rescued. Many a weary traveler is cheered and encouraged by the company of a faithful dog.

We once visited a farm housein western Minnesota for the purdose of looking at some stock. The men were all at work and only the farmer's wife and two children were about the premises. The oldest child was only about two years old. The woman laid the little child on the grass, while near by were several large hogs, some colts and a cow. The elder child accompanied the mother, who was going to show us the stock. We said, are you not afraid to leave the baby near those hogs? Oh, no, said she, he is well protected. We looked back and saw a large Newfoundland dog trotting up to the child. The mother said, "no animal can hurt baby when Prince, (meaning the dog) is near."

With all this in favor of the dog, is it any wonder that the student of veterinary medicine and surgery is compelled to study his diseases and their treatment? We will now take up some of the common troubles of the dog and prescribe the best treatment. To make a good dog, the puppy must be properly reared. It should have plenty of exercise and never be tied up.

The sleeping quarter should be clean and well ventilated. Great care should be taken in feeding puppies, and the diet changed as the condition of the discharges would indicate. After weaning, give them frequent allowances of milk. But the milk should always be skimmed. Sour milk, once in two or three days, is good

as it is very destructive to worms. A little lime water is also good once or twice a week. If feeding milk brings on diarrhœa, give a change of food to mutton broth, or beef tea or tea and bread broken in it.

You can begin to give meat when about three or four months old. The meat must be fresh and lean. Never give puppies unsound food of any kind. Meat should always be chopped up in small pieces, and may be either cooked or raw. Rice is good for puppies, and a little raw liver is good to move the bowels.

DIARRHŒA.

This trouble is caused by indigestion, and can always be regulated by the diet, especially in puppies.

TREATMENT.

If the case is bad, give first a dose of Caster Oil adding thereto twelve drops of Laudanum. Milk and Lime Water in the proportion of four to one is good every three or four hours. If this does not stop it give the following: Tincture of Opium 3 drams, Chloroform ½ dram, Tincture of Kino 3 drams, water 2 ounces, mix. Give 1 teaspoonful every five hours to a large dog. Should the trouble continue more than twelve hours after, give 1 to 2 teaspoonfuls of Paregoric twice or three three times daily. For old dogs Dovers Powders is good, in from 3 to 7 grain doses every seven or eight hours; but use the Castor Oil first in every case. If the discharges are offensive, you should repeat the Castor Oil once every three days.

CONSTIPATION.

Lazy, pet dogs are very subject to this trouble. The discharges are dry and hard, often passed with pain. There is often vomiting, offensive breath and loss of appetite, and sometimes a coated tongue.

TREATMENT.

In most cases the trouble may be overcome by regulating the diet. Boiled Liver chopped up among the food is good. In more severe cases give Calcined Magnesia, or Syrup of Buckthorn,

WORMS.

Frequently puppies, and sometimes old dogs, lose the power of their hind legs, but they recover after a discharge of the worms,

What will remove these pests in one dog will be useless in another. Consequently, after proper intervals, the drugs should be changed, The Santonine Iron Powders is one of the best for round worms. Sulphuret of Iron, 12 grains; Santonine, 12 grain; Areca Nut, 1½ drams; mix, divide into six doses. Give one every morning. After the last, give a dose of Castor Oil. The Oil of Turpentine is also good for old dogs. But in puppies give sour milk as directed, and the powders.

FLEAS.

These pests are very troublesome to puppies. Combing with a fine-tooth comb and rubbing flea powder in the hair will remove or kill them. Never wash a puppy; but you may wash an old dog. There are two kinds of fleas that afflict dogs, especially old dogs. The sand flea (*pulex penetrans*) and the common flea (*pulex irritans*). The latter bites, producing pimples on the skin; but the sand fleas burrow into the skin and cause considerable inflammation.

Never have the dog kennel in or near a sand bank, for in such a place the sand fleas are very troublesome. These pests are very troublesome; but about the best thing that can be done is to wash the dog thoroughly with soap and water; then comb thoroughly with a fine-tooth comb and give a good rubbing with a solution of boiled Quassia Chips. Put 2 drams of Carbolic Acid in 1 pint of the Quassia solution. Dipping the comb in Kerosene and combing the animal will often kill the pests. Lice require much the same treatment as fleas.

Should Eczema follow, where the dog is always scratching, and rubbing the hair off in spots, it may be advisable to use the Mange Liniment.

COMMON COLD.

Symptoms:—He loses his appetite, is dull and disinclined to move about, the nose is dry and hot, there may be considerable sneezing, the eyes are red and watery.

TREATMENT.

Keep the dog warm, give him a dose of Castor Oil to move the bowels. If there is much fever, give him Tincture of Aconite Root, 1 drop; Fluid Extract of Belladona, 2 drops; in a teaspoonful of water every three hours. At night give him 4 grains of Dovers

Powder. If he has lost his appetite give him scraped raw beef three or four times daily. Feed light.

INDIGESTION.

This is a very common trouble among dogs. The rules laid down for feeding the horse is also applicable to the dog, so far as the proper time for feeding and the quality of the food are concerned. Indigestion will often cause a partial loss or irritability of the appetite; sometimes vomiting.

TREATMENT.

The trouble can generally be avoided by regulating the diet. Should diarrhœa follow, give 1 or 2 teaspoonfuls of Paregoric two or three times daily.

COLIC.

SYMPTOMS:—The dog is restless, he moans, possibly utters sharp cries, there is considerable pain, he moves about with arched back. He often tries to vomit and won't eat.

TREATMENT.

If there is much pain give him 1 teaspoonful of Paregoric every two hours till the pain is subdued, or 16 drops of Laudanum in the same way. Warm bathing over the bowels will give relief. If he vomits the medicine give double the doses per rectum.

PILES.

This trouble is seldom found in any of the lower animals with the exception of the dog. The tumors sometimes appear outside the anus.

SYMPTOMS:—Switching of the tail, painful passages, and the latter tinged with blood. He will sometimes drag himself on his haunches.

TREATMENT.

Empty the rectum by manipulation, give small doses of castor-oil; take benzoated lard, 1 ounce; oak galls, 1 ounce; tannic acid, ½ dram; mix, apply once daily with the finger; restrict food for some time.

DISTEMPER.

This disease generally attacks young dogs. There is great similarity between this disease and typhus fever in the human fam-

ily. Dogs with distemper should never be allowed to play with children. When the trouble first comes on there is dullness, the animal wants to lie still, there is loss of appetite, at first it looks like a common cold, there is a dry cough, the nose is dry and hot, there is a watery discharge from eyes and nose. Later it changes to a rather thick, yellow matter, the discharge sticks around the eyes and nose. There is considerable fever. Sometimes vomiting and constipation. There may be eruptions of the skin, loss of hair on parts of the body. The fever generally reaches its height in from five to seven days, but some cases take several weeks to recover.

TREATMENT.

As the disease is self-limited, the only treatment necessary is to assist nature to throw off the disease as lightly as possible. Distemper is very seldom fatal. When death occurs it is owing to complications such as pneumonia, jaundice, convulsions, appoplexy and other troubles. Where such compliactions exist, and the dog is valuable, a qualified veterinary surgeon ought to be consulted. It requires a great deal of care in nursing a dog with distemper. He must be kept in a clean, well ventilated room. He should have good, nutritious food. Too much importance cannot be placed on the necessity of pure air and good ventilation. One of the first steps to be taken is to unload the bowels and castor oil is the best. While the food should be good, the quantity must be limited. To control the fever give the following: Fluid Extract of Beladona, 40 drops; Tincture of Aconite Root, 30 drop; Chlorate of Potash, 1½ drams; Sweet Spirits of Nitre, 2 drams; Water, 2 ounces; mix. Give 1 teaspoonful every two or three hours while there is high fever. If there is a tendency to vomiting and diarrhœa, give milk and lime water, strong beef tea. Food should be poured down his throat at least three times daily. Milk and lime water are easily kept on a weak stomach. A raw egg is good in the milk and lime water. If there is constipation, give a little cooked oatmeal. Sponge the matter from eyes and nose with Borax and water. Be very careful in changing the diet If recovery is slow, a little Cod Liver Oil is good, given twice daily. If there is not much fever the following mixture is very good for this trouble: Elixir Cal. of Iron and Bismuth,

1½ ounces; Syrup of Tolu, 1 ounce; Syrup of Squills, 1 dram; Pulv. Extract of Glycerine, 1 dram; Water, 6 ounces. Mix. Give 1 dessertspoonful three times a day.

PARALYSIS.

This is more a symptom than a disease. It is generally seen in one or both hind legs, or one or both fore legs, or may be in one side of the body and not in the other. It may be caused by wounds or fractures. It may follow an attack of distemper, or may be caused by worms, constipation, etc.

TREATMENT.

Remove the cause, if possible. Move the bowels with Syrup of Buckthorn, in the same dose as Castor Oil. Strychnine Pills is good for this trouble, acting as a nerve stimulant, and must be continued for some time, say two or three weeks at a time.

THE EAR.

Abscesses often form on the flap of the ear. Open them at the most dependent part. Keep clean and apply the Oxide of Zince Ointment once daily. Sometimes the ear becomes itchy, and continually scratched with the claws. Treat it with the Mange Liniment.

MANGE.

This is a very common disease in dogs. It is a contagious disease. The dog is continually scratching and rubbing, the skin is red and inflamed, eruptions break out on the skin and on any part of the body; but generally first on the head. If the disease continues for some time, the animal will become debilitated.

TREATMENT.

Wash the dog with warm water and Castile Soap, then rub well in the Mange Liniment. Reapply the Liniment without washing, the two following days, once each day.

HYDROPHOBIA.

Hydrophobia, or more properly Rabies in the dog, is a disease about which there is more insane terror than any other disease we know of. Why people should be thus terrorized by a disease that is so rare passes comprehension. Rabies prevails chiefly among animals of the canine species.

SYMPTOMS:—At the beginning of the disease the animal is dull, sullen and nervous. He is inclined to shun company, eyes are slightly reddened, he seems listless; sometimes he seems unable to eat. If let loose he will bite any object with which he may come in contact. He will often swallow rags or dirt of any sort. As the disease advances he becomes more restless, may jump at the door as if he heard some one approaching. If tied up he will try to break loose; they will suffer blows without uttering a murmur. If you hold a stick to him he will bite it so hard that his teeth will break. Teasing him increases the severity of the paroxysms. One of the most diagnostic symptoms is the peculiar tone of the voice. It is a sound between a bark and a howl, as if he had a sore throat. The desire for food disappears as the disease reaches its height. The gait of a rabid dog is very peculiar; it is like a jog trot. Carries his head low, his tongue protruding, and very often swollen and bleeding.

The progress of this disease is very rapid. They may die in from two to ten days. About five days is the average time the disease takes to finish its work. It should be remembered that few animals compare with the dog in intelligence and high mental development, and as the study of canine diseases is yet in its infancy, and may yet prove the existence in dogs of mental troubles that are at present overlooked. When a dog presents certain symptoms, that are seen in rabies, people run to the conclusion that the poor dog is mad. They execute him and all canines within reach.

We must remember that dogs often suffer severe pain from epilepsy, excessive fear, neuralgia, starvation, toothache, parasites, disease of the kidneys, etc., etc. Dogs are often in a state of delirium caused by the intense heat of the sun; but people base their opinion too often upon individual symptoms.

TREATMENT.

Immediately after the bite of a dog presumed to be rabid, the whole wound should be sucked with the mouth, and as soon as possible cauterized with a hot iron. If there are no abrasions on the lips or tongue, it is perfectly safe to suck the wound. The sucking with the mouth should be continued until the arrival of a

hot iron to cauterize. According to the best authorities, there is no necessity for a person bitten by a rabid dog to take the disease. The amount of fear has more to do with it than has the bite. Hot weather has nothing to do with the disease, as more cases occur in winter than any other time of the year. Don't keep the dogs tied with chains. Allow them plenty of cold water during the summer months.

POULTRY.

HENS.

A farm is not complete without hens, and there is no reason why they should not receive some attention here. If hens are not kept warm and comfortable and fed well they will never lay eggs. Provide a good warm, well lighted house for them. Don't let them paddle about in their own feed and water. Have things so arranged that they can eat or drink without dirtying or destroying. Have the perches all on a level, and not one above another, as they then will all try to be on the highest one. You require to give them outdoor exercise during fine weather; this is healthy for them. Especially should they get out in the early morning.

Young chickens should not be hurried too soon from the nest after getting out of the shell. They don't need any food for twenty-four hours, or more, after being hatched. Boiled eggs, cut up, is the best you can give, for their first meal. Soaked bread, cooked oatmeal and Indian corn, chopped meat and green food is good for them. Let them have coal ashes to roll in. Give them plenty of fresh water.

A hen lays more eggs the first year of her life than she does any other year. The eggs of young hens give stronger chickens than does the eggs of old hens.

It does not pay to keep male birds after they are two years of age. Keep your poultry properly and they will seldom be sick. If one of your hens gets sick take it at once away from the rest of the flock.

Lice can always be kept away by the use of kerosene on the perches and in the nests. You can kill all the lice in the house by putting a lot of sulphur in a pan, on the center of the floor, set fire to it, then close the door and try to have the place as near air

tight as possible. Of course the poultry must be outside. After this, whitewash the interior roosts, nests and everything else.

An occasional feed of chopped onions, or about an ounce of sulphur in the food of twenty fowls, once in two weeks, is beneficial.

As bran contains more nitrogen and phosphates than corn, it is a better food for poultry, and still better if mixed with potatoes.

Many a bird's constitution has been ruined with medicine. Turpentine is good for destroying the thread worms that cause gapes. Put a few drops of the turpentine among the grain you feed to the chickens.

Warm milk is excellent for laying hens. Warm food, also, will increase their laying qualities.

There is more money in fat than there is in lean chickens. See to it that your chickens are fat and well dressed before you bring them to market.

TURKEYS.

Put turkey eggs below a good hen and she will be a good mother for the young turkeys. Young turkeys must be carefully handled as they are very tender for the first four weeks. About two hours after they get out of the shell they should be put into a warm, dry place. Until they are four or five weeks old they should not be exposed to the hot sun. Have their coop placed on grass. Young turkeys require careful feeding, and regularly given for at least the first three months. They should be fed from the time when they are six or eight hours old with bread crumbs and boiled eggs. Cooked Indian meal is good for them and also boiled sour milk. Uncooked meal should not be given to very young turkeys. Beef chopped fine is good for a change. They require to be fed often and require a good supply of pure water. Young turkeys should be allowed to drink water whenever they want it, without being able to get into the water. Young turkeys will not stand getting wet, either by rain or paddling until they are some months old. Turkeys can be fattened any time after they have attained the age of five months. If you wish to fatten them rapidly keep them in a nice, roomy place and feed cooked food, such as oatmeal, potatoes, oats and barley; have them well supplied with gravel. Turkeys well kept are certainly profitable on a farm.

DUCKS.

Ducks are very troublesome and unprofitable if there is not plenty of water for them to roam in. The same may be said of geese. But if there is either a natural stream, or an artificial pond, ducks and geese can be profitably raised. They will wander a long distance to get into water. Young ducks should not be exposed to stormy weather when they are very young; but they should have free access to pans of water, keep the water changed frequently. Let their first food be boiled eggs and bread crumbs, they very early like green food boiled with oatmeal. After they are about three months old they will eat almost any kind of food that an old duck will eat.

Geese, on the other hand, need principally green food, and they are more indifferent to water if they get plenty of green food. A goose will only lay from twelve to twenty eggs if you allow the eggs to remain in the nest; but if you take away each egg as it is layed, she will lay many more. Young goslings should be taken from the nest as soon as they are hatched, put in a wool nest covered and kept warm, after all are hatched put them back in the nest. They don't need food for eight or ten hours after being hatched. Then give them bread and milk; cooked potatoes and bran is very good for them. They like their food warm, like young turkeys they cannot be exposed to storms. They only require to be fed twice a day in addition to what they can pick up. To raise poultry profitably a great deal must necessarily depend upon the person in charge. Geese should never be kept with other poultry, as they are very quarrelsome and like to be by themselves.

FOMENTATIONS.

When warm fomentations are prescribed, the water should be hot enough to be comfortable for the hand. If cold fomentations are ordered the water should be cooled with ice. Very often it is not convenient to get ice; then the following plan is desirable: In one gallon of water put $1\frac{1}{2}$ ounces of Sal-ammoniac and $1\frac{1}{2}$ ounces of Saltpetre. Or if these are not at hand, use the coldest water you can get.

POULTICES.

Poultices are made of one or more of the following materials: Bran, Linseed Meal, boiled Turnips, or boiled Carrots. Turnips make a splendid poultice, as their soft nature is very soothing to the inflamed parts to which they are applied. Whenever a poultice gets cool it ought to be changed by putting on a fresh one that is warm. Cold poultices do harm where warm poultices are prescribed, and where cold poultices are prescribed warm poultices might do much harm.

This same rule applies to medicines. Medicine that is good in one trouble would be very injurious to some other trouble. For instance, we give an animal troubled with constipation, Aloes, Salts or Oil. The action of these agents is to make the machinery inside to work faster and thus unload the bowels. But suppose we give these agents to an animal suffering from diarrhœa, the result would very prabably be death, because from some cause or other the bowels are too much irritated, so steps must be taken to bind up instead of relax. If there is fever we give Aconite, etc., in order to quiet the action of the heart. Suppose we give Iron, Copper, Gentian, or other tonics when there is much fever, the result would very probably be the death of the animal, as these agents, instead of quieting the heart's action like Aconite, would increase the action of the heart and probably hasten the death of the animal.

Nitre, Ether, Rosin, Turpentine, etc., are agents that act directly on the kidneys, and are got rid of by passing through these organs with great rapidity. Still, in some diseases of the kidneys and bladder, these same medicines would be very injurious. For instance, a horse is troubled with stoppage of water, the bladder is full, and there is much pain, the first thing to be done is to find out the cause and remove it if possible. The administration of much Nitre, Turpentine and other kidney stimulants causes the kidneys to secrete still more urine, when the animal cannot get rid of what is already secreted. A very large surface of the body blistered at one time with Cantharides, will often bring on inflammation of the kidneys, consequently the use of this agent, either internally or externally when the kidneys are inflamed is very dangerous.

If you are treating a case of paralysis you must give medicines that will stimulate the nervous system by administering Nux Vomica and other nerve stimulents instead of giving Aconite, etc., which would further depress the nervous system. Medicine, like food, is taken up by the blood from the mucus membrane, or skin, and through the blood they act on special organs or parts of the body. Thus it will be plainly seen, that in order to use medicine properly its actions and uses must be understood, and then when the causes and symptoms of disease is properly understood, there is little difficulty in prescribing treatment. If the reader has a horse suffering from some trouble that is easily diagnosed, catarrh, (a common cold), for instance, he knows it, and will be able to tell that his horse has a cold, and will tell what is good and proper treatment; but, as a rule, he cannot tell the actions and uses of the remedies he uses, he only knows that some other person told him that a certain medicine was good for the trouble, and so he believes it and applies the treatment. This is all right so long as the source of information is reliable; but otherwise a person is not justified in using or administering any drug unless he knows the action, use and proper dose of the same. Hence the necessity of again admonishing all persons in charge of sick animals, to pay strict attention to the treatment of every case. Some medicines act rapidly, others take considerable time before you can see any results.

Poisoning and Antidotes.

It is very important that some of the more common cases of poisoning should be noticed in a work of this sort, so that some of the more simple remedies may be applied without any needless loss of time. Aconite in too large doses or too often repeated is a frequent cause of poisoning. The symptoms of Aconite poisoning are as follows: Considerable twitching of the muscles of the head and neck, there is a discharge of frothy mucus from the mouth, the animal freequently act as if swallowing something, the mouth is nearly always closed, there is often attempts made to vomit, the lips will frequently open and a frothy discharge will escape from the mouth, the breathing is very difficult and the animal is in much pain.

TREATMENT.

For the horse give powdered Charcoal, half an ounce; mixed with a little water, or still better add half a dram of Tannic Acid to the Charcoal. Tannic Acid is the best antidote of Aconite we know of, but it must be used promptly to be of much service. Moderate bleeding from the juglar vein is good.

ARSENIC.

SYMPTOMS:—Dullness, high pulse, colicky pains, high colored mucus membrane, the limbs are cold, purging. In dogs there is vomiting and purging of brown or bloody matter. The animal dies in convulsions.

TREATMENT.

As horses and cattle are not affected by an emetic, the best way to get rid of the poison still unabsorbed is by the use of a stomach pump. Charcoal or fine clay given in a little water or milk tend to absorb the poison and protect the stomach. For the dog give an emetic such as mustard, or salt and water. Then give the dog plenty of milk, flour and water, or oil and lime water, whichever of these are at hand. Then send to your druggist for the Hydrated per Oxide of Iron, as this is the best antidote; give a dose every ten minutes for three or four doses.

STRYCHNINE.

SYMPTOMS:—The animal seems at first to be very restless; he then shows signs of pain, there is considerable twitching of the muscles, labored breathing, high pulse, exhibits great fear when touched, and die in a convulsion. Dogs often snap with the jaws, and utter shrill, piercing cries. Strychnine is the active principle of Nux Vomica, and when a poisonous dose of the medicine is given in either form it is pretty sure to prove fatal, as there are no reliable antidotes for Nux Vomica or strychnine.

TREATMENT.

It is very important to have as much of the poison removed as possible from the stomach, this can only be done by the use of the stomach pump or an emetic, but it is very difficult to use either of these, often the spasms sets in. Dissolve Chloral Hydrate, one ounce in two ounces of water; this will make two doses for a horse, give it per rectum, and see that it is retained long enough to

become absorbed. Repeat the dose every half hour until the convulsions are under control. For dogs give from ten to thirty grains of the Chloral Hydrate in a teaspoonful of water every twenty minutes. (per rectum). Should the animal be inclined to sleep, let him do so as long as possible. If after the above treatment the animal seems to be on the gain and inclined to move about, give small doses of Aromatic Spirits of Ammonia every two or three hours; give it in water and well diluted. Horses will take about one tablespoonful in three ounces of water. Dogs take from ten to forty drops well diluted. Continue this until you see that the animal seems conscious.

CARBOLIC ACID.

There is no agent with which people are so apt to cause poisoning as with Carbolic Acid. This is owing to the very extensive use of the drug, especially as an external application. Carbolic Acid destroys germs and prevents their formation, hence it is very useful in dressings for wounds. All wounds should be washed as early as possible with a one per cent solution of Carbolic Acid; but if the parts are swelling badly, a stronger solution would be advisable. The symptoms of poisoning with Carbolic Acid are as follows: Dullness, trembling, loss of appetite, probably unable to walk, and may soon die.

TREATMENT.

Emetic, or stomach pump. About the best antidote is Saccharated Lime in doses or two ounces for horses diluted with water. The dog will take from one-half to two and a half drams diluted in water. A hot mustard bath is good with plenty of hand rubbing. Give stimulants such as the Carbonate of Ammonia and brandy.

In case of poisoning when it is impossible for the casual observer to know the nature of the poison, we would advise the following treatment: Try to get rid of the unabsorbed poison by giving an emetic if possible. Give the following as soon as possible: Hydrated Iron, 1 dram; Powdered Charcoal, 1½ drams; Calcined Magnesia, 1 dram; water, 2 ounces; mix, give in 1 dose to a medium sized dog. A horse will take from six to ten times the above dose.

It is very important that no time be lost, either to get rid of the poison by vomiting or by counteracting the effect likely to be caused by the poison; no time should be lost in giving a horse, cow or sheep such agents as Charcoal, Glycerine, Lard, or even Clay, as these prevent the poison from acting on the walls of the stomach, and thus prevent it getting into the circulation. Very often when small doses of poison have been taken, such doses as are too large as a medicine, and, at the same time, too small to destroy life rapidly; if such doses have not been got rid of early, it is a good plan to give a good dose of physic in order to have the poison worked off through the system as soon as possible. Medicines are very useful and necessary when given in the proper doses, but hurtful and injurious when taken in too large doses; hence the necessity of being careful in giving medicine in the proper doses and at proper intervals.

There are about 252 bones in the skeleton of a horse. The small intestine of a horse is about one inch in diameter and 73 feet long, and the large intestine is about 24 feet long, divided into three parts, Caecum, Colon and Rectum. The heart of a horse is about 8 inches long and weighs about an average of 6½ pounds. Cattle have four stomachs known as the Rumen, Reticulum, Omasum and Abomasum; owing to this arrangement cattle are capable of digesting much coarser food than the horse.

DRY SKIN.

This is very common in the newborn, especially when there are twins or triplets. Rub the first born with the afterbirth and sprinkle a little salt on the skin, or rub with the salt a raw egg; this will very often induce the mother to own the young ones. Mothers should always be allowed to lick their young. The above plan works well with sheep.

PERIODS OF GESTATION.

A mare may be regularly in heat, and even take the horse, and still be breeding a colt.

The mare takes from 307 to 394 days, average 346 days.

The cow takes from 240 to 290 days, average 265 days,

The ewe takes 140 to 159, average 150 days.

The sow takes 112 to 130, average 118 days.
The bitch takes from 42 to 68 days.
The cat about 50 days.

PROPER AGE FOR REPRODUCTION OF DOMESTIC ANIMALS.

AGE.	DURATION OF POWER.
Horse, 4 years	12 to 15 years
Mare, 4 "	11 to 13 "
Cow, 3 "	10 to 12 "
Ram, 2 "	6 to 7 "
Ewe, 2 "	5 to 6 "
Sow, 1 "	5 to 6 "
Bitch, 2 "	7 to 9 "
Cat, 1 "	6 to 7 "

GROWTH AND LIFE OF ANIMALS.

Man,	grows for	20	years,	and	lives	70	to	100
Horse,	" "	5	"	"	"	25	to	40
Ox,	" "	4	"	"	"	15	to	20
Dog,	" "	2	"	"	"	12	to	14
Cat,	" "	1½	"	"	"	9	to	10
Swine,	" "	2	"	"	"	18	to	20
Sheep,	" "	2	"	"	"	8	to	10

Proper Doses for the Horse.

Aconite Tincture	10 to 15 drops.
Alcohol	1 to 2 ounces.
Aloes, Barbadoes, powder	4 to 8 drams.
Ammonia, Carbonate	2 to 3 drams.
Ammonia, Muriate	1 to 2 drams.
Ammonia, Aqua	1½ to 2½ drams.
Areca Nut, powdered	3 to 5 drams.
Arsenic, Fowler's Solution	½ to 1 ounce.
Belladonna, Fl. Extract	15 to 30 drops.
Blue Vitriol, powder	1 to 2 drams.
Camphor, Spirits of	30 to 50 drops.
Cantharides, powder	3 to 5 grains.
Castor Oil	10 to 16 ounces.
Chlorate of Potash	1 to 2 drams.

Epson Salts.....4 to 9 ounces.
Ether.....1 to 2 ounces.
Gentian Root, powder.....1 to 1½ drams.
Gentian, Tincture.....2 to 4 drams.
Ginger.....2 to 4 drams.
Glauber Salts.....6 to 10 ounces.
Iodide of Potash.....1 to 1½ drams.
Linseed Oil, raw.....1 to 1½ pints.
Nux Vomica, Tincture.....30 to 50 drops.
Opium, Tincture.....1 to 2 ounces.
Prepared Chalk.....½ to 1 ounce.
Saltpetre.....2 to 4 drams.
Sulphur.....1 to 2 ounces.
Hypo-Sulphite of Soda.....1 to 2 ounces.
Sweet Spirits of Nitre.....½ to 1 ounce.
Strychnia.....½ grain.
Tannic Acid.....20 to 40 grains.
Tincture of Iron.....1 to 2 drams.
Turpentine.....½ to 1 ounce.
Tincture Veratrum Viride.....10 to 15 drops.

For difference in doses for different animals, see page 6.

Handy Medicines to Keep in Stock.

Every stock-owner who is far from a drug store, should keep the following medicines in stock. There are a few troubles that require immediate attention, or the chances are the animal will be lost:

Raw Linseed Oil, 1 quart.
Castor Oil, 1 quart.
Sweet Spirits of Nitre, 4 ounces.
Tincture of Aconite Root, ½ ounce.
Fluid Extract Belladona, ½ ounce.
Barbadoes Aloes, 2 ounces (in 1 onuce packages.)
Spirits Turpentine, 5 cents worth.
Jamaica Ginger, 1 ounce.
Glauber Salts, 1 pound.
Fly Blister, 1 ounce.

Have the bottles marked and tightly corked and laid where you can put your hand on what you want.

PRESCRIPTIONS.

FEVER MIXTURE.

Tincture of Aconite Root, ½ ounce.
Fluid Extract of Belladona, ½ ounce.
Sweet Spirits of Nitre, 1½ ounces.
Ammonia Muriate, 1 ounce.
Water sufficient to make one pint.

DOSE: Give two tablespoonfuls every two or three hours till the fever is reduced; then three times daily.

TONIC MIXTURE.

Tincture Muriate of Iron, 1 ounce.
Tincture of Gentian, 2 ounces.
Sweet Spirits of Nitre, 2 ounces.
Tincture of Nux Vomica, 1½ ounces.
Water sufficient to make 1 pint.

DOSE:—Give two tablespoonful three times a day.

TONIC POWDER.

Sulphate of Iron, 1½ ounces .
Saltpetre, 1 ounce.
Linseed Meal, 4 ounces.

Mix. Give 1 tablespoonful in feed, night and morning. or

Sulphate of Iron, 1½ ounces.
Pulverized Nux Vomica, 1 ounce.
Pulverized Gentian, 2 ounces.
Linseed Meal, 2 ounces.

Mix. Give 1 tablespoonful in feed night and morning.

HEALING LINIMENT.

Sugar of Lead, 1 ounce.
Sulphate of Zinc, ½ ounce.
Tannic Acid, 2 drams.
Water, 1 pint.

Apply to the parts night and morning.

SPRAIN LINIMENT.

Tincture of Arnica, 2 ounces.
Tincture of Opium, 1 ounce.
Spirits of Turpentine, 1 ounce.

Aqua Ammonia, 1 ounce.
Water to make 1 pint.

Rub a little well in once daily, after bathing the parts with warm water.

POWDER FOR HEAVES.

Powdered Elecampane, ¼ pound.
Powdered Lobelia, ¼ pound.
Powdered Gentian, 2 ounces.
Ginger, 2 ounces.
Muriate of Ammonia, 2 ounces.

Mix. Give ½ teaspoonful night and morning in feed.

MANGE OINTMENT.

Carbolic Acid, 1 ounce.
Oil of Turpentine, 2 ounces.
Oil of Tar, 3 ounces.
Sulphur, 3 ounces.
Lard, 1 pound.

Mix. Apply once every day.

HOOF OINTMENT.

Barbadoes Tar, ½ pound.
Soap Liniment, ½ pound.
Benzoated Lard, ¼ pound.

Mix. Apply daily.

SPASMODIC COLIC.

Tincture of Aconite, 12 drops.
Fluid Extract of Belladona, 20 drops.
Spirits of Nitrous Ether, 1 ounce.
Tincture of Opium, 1 ounce.
Water to make 6 ounces.

Give in one dose. Repeat in one hour if necessary.

LINIMENT FOR SWEENYED SHOULDER.

Tincture of Cantharides, 1 ounce.
Oil of Turpentine, 1 ounce.
Aqua Ammonia, 1 ounce.
Linseed Oil to make 8 ounces.

Rub a little well in on the wasted muscles once every two days.

LINIMENT FOR PAINFUL SWELLINGS.

Muriate of Ammonia, 2 ounces.
Sugar of Lead, 1½ ounces.
Laudanum, 2 ounces,
Arnica, 2 ounces.
Water to make 1 quart.

Bathe the swellings three times daily.

WORM POWDER FOR PUPPY THREE MONTHS OLD.

Sulphuret of Iron, 12 grains.
Santonine, 12 grains.
Areaca Nut, 1 dram.

Divide into 8 doses. Give one every morning.

MANGE LINIMENT.

Carbolic Acid, ½ ounce.
Sulphur, 1 ounce.
Oil of Turpentine, 1 ounce.
Oil of Tar, 2 ounces.
Linseed Oil to make 1 pint.

After bathing the parts with warm water and soap, rub some of this well in once in two days; but only wash before the first application. Don't let animals lick the medicine.

FLY BLISTER.

Powdered Cantharides, 2 drams.
Oil of Turpentine, 2 drams.
Lard, 1 ounce.

Melt the Lard and then put in the Turpentine and Cantharides. Mix it well and let it cool.

How to Use It:—Rub it well in on the part where applied; twenty-four hours after, grease the part, and grease it once daily for 15 days. After 20 days you can reapply the blister if necessary. Tie the horse'a head so that he cannot lick the blister for at least two days.

IODIDE OF MERCURY BLISTER.

Bin Iodide of Mercury, 1 dram.
Vaseline, 1 ounce.

Mix. Apply in the same manner as the fly blister. Always rub in a blister with your hand, taking little at a time on your

hand so that there is no waste. As to the quantity to be used, it must depend on the judgment of the user.

The Mercurial Blister is used in bony enlargements, such as splints, ringbone, etc.

While the Fly Blister is best for curb, swollen glands and sprained tendons.

ANODYNE LINIMENT,

For Sore Swellings, Where There is Much Pain.

Sugar of Lead, 1 ounce.
Tincture of Myrrh, 1 ounce.
Fluid Extract of Witchazel, 2 ounces.
Alcohol, 2 ounces.
Water to make 1 pint.

After bathing the parts with warm water and salt, rub some of the above well in once daily. This is good for sore tendons of young trotting horses. After rubbing in the liniment, bandage the legs.

OXIDE OF ZINC OINTMENT.

Benzoated Lard, 1 ounce.
Zinc Oxide, 1½ drams; mix.

Apply once daily.

Dissolve 2 ounces of common salt in 1 pint of warm water, then add 1 pint of vinegar. This makes a good wash for sore tendons on young driving horses. After bathing the parts well with the above put on bandages.

Common salt is a good application for cancerous sores about the legs of horses or cattle. Apply the salt freely to the raw surface once every day.

Great care should be observed in the use of medicine; be exact in measuring doses; always give the medicine as directed. Never allow any person to handle the medicine you are giving to a sick animal; only the nurse should have access to the medicine.

SHEEP DIPS.

The folloving is recommended as good dips for sheep. It has also proven a useful wash for the destruction of lice on horses and cattle:

Boil 2 gallons of water and put 1½ pounds of soap in it; add 4 gallons of Kerosene, and 1 gallon of the Oil of Tar; stir it well

together for 15 or 20 minutes after beginning to boil. One gallon of this in 8 of water is about the proper strength to use it. Those who have tried it say this is a good dip.

Another plan is to take 2 gallons of Kerosene to 1½ of milk; boil the milk for at least fifteen minutes before putting in the Kerosene; add ½ gallon Oil of Tar, and stir them together until well mixed. One gallon of this in 10 gallons of soft water is very highly spoken of as a sheep dip.

Another good sheep dip is the following: Put 1¼ pounds of Arsenic in 100 gallons of water; or the best plan is to put 1¼ pounds of Arsenic in 25 gallons of boiling water; add to this 3½ pounds of Carbonate of Soda, 4½ pounds of Soft Soap, and 3 pounds of Sulphur; stir well together; then add cold water sufficient to make 100 gallons. This will be enough dip for at least 100 sheep. Never allow the animal's head to enter the dip, and hold the sheep in the bath about forty seconds; then strain all the dip out of the wool back into the tub. The above mixtures are good for the destruction of lice and other parasites on horses and cattle also; but be careful not to allow the animals to lick the medicine off any part of the body, as it is apt to cause poisoning. Be careful, also, not to allow the dipped sheep to walk over grass while the dip is liable to drip on the grass, and the sheep become poisoned by eating the grass.

USEFUL TABLES.

The following tables have been collected from different sources, we believe them to be reliable and feel justified in giving them a place in this work:

Quantity of hay, or its equivalent, required per day by each 100 pounds of live weight of various animals:

Working horses	3.8 lbs.
Working oxen	2.41 "
Fattening oxen	5 "
Milch cows	2.25 to 2.40 "
Young cattle	3.8 "
Steers	2.84 "
Pigs	3 "
Sheep	3 "

RELATIVE VALUE OF FOOD FOR CATTLE.

100 pounds of good hay is about equal to 400 lbs. green clover, 275 lbs. green corn, 374 lbs. wheat straw, 442 lbs. rye straw, 195 lbs. oat straw, 400 lbs. dry corn stalks, 276 lbs. carrots, 54 lbs. rye, 45 lbs. wheat, 57 lbs. barley, 59 lbs. corn, 69 lbs. linseed cake, 105 lbs. wheat bran. Of course the care which animals receive, also their age and condition, will modify the effect of any kind of food; but no animal can be profitably kept on one kind of food.

RULE FOR MEASURING HAY.

Multiply the height in yards by the length in yards, and that by the width in yards, and divide the product by fifteen. The quotient will be the number of tons.

RULE FOR MEASURING GRAIN IN A BIN.

Multiply the length in inches by the breadth in inches, and that by the depth in inches and divide the product by 2150, (the number of cubic inches in a bushel), and for heaped bushels by 2748, and the quotient will give the number of bushels.

RULE FOR FINDING THE QUANTITY OF CORN IN EAR IN CRIBS.

Multiply length by height and then by width, add 2 ciphers to the result and divide by 124; this gives the number of bushels of ears, (level measure). Divide by 2 to find the number of bushels of shelled corn.

ANOTHER RULE.

Multiply the length, breadth and height together in feet to obtain the cubic feet. Multiply this product by 4 and strike off the the right hand figure and the result will give very nearly the number of bushels of shelled corn.

STANDARD WEIGHTS OF GRAIN PER BUSHEL.

Wheat	60 lbs.
Corn	56 "
Rye	56 "
Barley	48 "
Oats	32 "

A HANDY WAY TO MEASURE LAND.

968 yards long by 5 yards wide contains 1 acre; 484 yards long by 10 yards wide contains 1 acre; 242 yards long by 20 yards wide contains 1 acre; 80 yards wide by 60½ yards long con-

tains 1 acre; 60 feet wide by 726 feet long contains 1 acre; 130 feet wide by 363 feet long contains 1 acre; 320 feet wide by 181½ feet long contains 1 acre, and 440 feet wide by 99 feet long contains 1 acre.

60 drops 1 dram.
8 drams 1 ounce.
16 ounces 1 pound or pint.
2 pints 1 quart.
4 quarts 1 gallon.

QUANTITY OF SEED PER ACRE.

Wheat	1½ to 2	bushels.
Barley	1½ to 2½	"
Oats	2 to 4	"
Buckwheat	½ to 1½	"
Millet	1 to 1½	"
Rye	1 to 2	"
Beans	½ to 1¼	"
Corn	¼ to 1	"
Peas	2¼ to 3½	"
Hemp	1 to 1½	"
Flax	½ to 2	"
Rice	2 to 2½	"
Potatoes	5 to 10	"
Timothy	12 to 24	quarts
Mustard	8 to 10	"
Turnips	2 to 3	lbs.
Red Clover	10 to 16	"
White Clover	3 to 4	"
Blue Grass	10 to 15	"
Orchard Grass	20 to 30	"

QUANTITY OF SEED PER ACRE IN ROWS.

Indian corn	½ to 1	bushel.
Broom corn	1-16 to ¼	"
Peas	1½ to 2	"
Beans	½ to 1½	"
Parsnips	4 to 5	"
Onions	4 to 5	"
Beets	4 to 6	"
Carrots	2 to 2½	"

WORK OF TEAM.

One team, moving 2 miles per hour, will plow in ten hours:
Width of furrow, 16 inches, 3.2 acres.

"	"	"	14	"	2.8	"
"	"	"	12	"	2.4	"
"	"	"	11	"	2.2	"
"	"	"	10	"	.2	"
"	"	"	9	"	1.8	"
"	"	"	8	"	1.6	"

SURVEYOR'S SQUARE MEASURE.

625 square links.....1 pole.
16 poles.....1 square chain.
10 square chains.....1 acre.
36 square miles.....1 township.

SURVEYOR'S LONG MEASURE.

7.92 inches.....1 link.
25 links.....1 rod.
4 rods, or 66 feet.....1 chain.
80 chains.....1 mile.

MILLET HAY.

During the winter and spring of 1890 there was a great deal of trouble among horses in the northeastern part of this state. There seemed to be something very pecular in the way that animals were attacked. The symptoms did not correspond with those of any other disease familiar to us, consequently we began to investigate the matter with the following result:

SYMPTOMS:—The horse is taken suddenly lame in one or more limbs, generally in the hock joint; it may disappear in a day or two and reappear in another leg. Sometimes the lameness would appear in the muscles over the kidneys which would be very much swollen, at other times the animal would appear stiff all over the body as if foundered.

One case was that of a young horse not feeling well for some days; his owner had him hitched up in a cutter and drove him about fourteen miles. When about seven miles from home the horse began to act worse, so his mate had to do all the pulling.

When about one mile from home the sick animal laid down in the snow. We were called out to see him, and found that the poor animal was hardly fit to stand up. We had a large sled brought out, and, with the assistance of a few men, got the horse in the sleigh. On reaching home he was dragged into the barn and by the use of stimulants and hand rubbing was able to stand up within an hour; but for two months he suffered the most excruciating pain in the hock joints. The pain then went to the fetlock joints, and around both the hind fetlocks there appeared hard, painful swellings. These enlargements were blistered with the Bin Iodide of Mercury blister three times, after which the horse was turned out to grass. Up to the present time he has done no work, but is gradually improving. We attended to over fifty cases, all of which had nearly the same symptoms and several terminated fatally. For the first few weeks the animal lies down most of the time and exhibits great pain. They often need to be assisted in getting up to their feet. In nearly every instance these horses were fed unthrashed millet during the winter months, and this, we believe, to be the cause of all the trouble.

Very soon after you feed millet, (hay and seed), to your horses you notice that they urinate often, in fact they continually flood the stall, thus it will be seen that the kidneys are over worked. The millet is a very rich food for horses, especially when they are not doing work in the winter months; the blood is loaded with certain ingredients and disease is the result. Several cases were examined after death, in all of which we found the blood thick and tar like, and other post-mortem appearances which led us to believe that millet feeding was the cause. We consulted several authorities regarding this matter, and they agreed in conclusion that feeding unthrashed millet was the cause of the trouble. On the other hand millet hay is a good food for cattle and sheep, but it is best mixed with other hay. If this is done it might be safely fed to horses, but alone it is too rich, and should be fed in small quantities, especially if it has become ripe before being cut. Millet should be cut before the seed is ripe just after the heads are well formed.

FLAX STRAW.

There are a great many farmers who allow their stock to feed at a flax straw pile during the winter and spring months. The animals no doubt are very fond of the flax seed found around the straw pile, but they also eat the straw and the result is sickness and death. We have examined calves after death and found that the eating of flax straw was the cause of death. There is so much undigestable material in this kind of feeding that the fiber is not digested, but forms into balls in the stomach, and by these means the calves died. The same trouble is also apt to happen with old cattle and horses. Pregnant animals are frequently attacked with spells of colic and the result is very often the colt or the calve is aborted and possibly the mother is also lost.

Flax straw does not even make good bedding, as it is too coarse for comfort, especially for horses. If you do not use the fiber in any other way, it is certainly cheaper in the end to burn it rather than allow your stock to eat such stuff and then lose the stock. We have found large balls in the stomach of cattle who have been fed at a wheat or oat straw pile, and the same was caused by eating the pieces of twine that is always to be found in a straw pile. How much sooner is this destructive work done when the animals eat flax straw? Just such little things done without any thought is very often the cause of great loss to the owners of live stock.

APPENDIX.

PARASITES.

We have already referred to a few, and only a few, of the many troubles of the lower animals caused directly by parasites, (either animal or vegetable). The great majority of parasitic diseases are too complicated for discussion in a work like this; so complicated that the great majority of those who read this book, and for whose benefit the book is especially published, could not read it understandingly. There are however a few troubles caused by parasites that we wish to refer to in order that people may be aware of the cause and take steps to remove the same. Parasites living inside of an animal are called endoparasites, and when they live on the outside of the body they are called ectoparasites. We have already referred to some of both classes and the troubles they cause. Many calves and lambs are attacked by what is known as lungworm disease, also called hoose, husk, parasitic bronchitis, etc. According to the best authorities this disease is mostly found in low lying, wet pastures, and especially where there are stagnant pools of water; but it also makes its appearance on elevated lands. It has been said that in England, hilly farms suffer most with this disease among sheep. Yearling calves and lambs suffer most, though it may attack old cattle. It is most common during the spring and fall of the year.

SYMPTOMS:—Calves and lambs exhibit nearly the same symptoms of difficult breathing, there is spasmodic fits of coughing, and the animal seems to gasp for breath. The coughing generally comes on when the animals are walking. During these fits of coughing some mucus is discharged. The mucus membrane of the mouth and nose is pale in color, there is often signs of bloating and in sheep the wool will fall off. Sometimes the animal suffo-

cates during a fit of coughing. It is most common among lambs in fall. Suspected cases of this disease should be carefully examined, it may prove fatal in a few weeks after the first symptoms make their appearence, or it may last for three or four months; the severity of the disease depends on the number of parasites lodged in the lungs.

Take the mucus discharge from the mouth or nostrils, and in it you can see the parasites like fine threads. Sometimes by putting the mucus in moderately warm water they will move about.

As a result of the debility caused by this disease in calves and lambs, you will find upon examination that the lungs are of a pale red color, and often adhers to the chest, pieces of the lung tissue are hard and will sink in water. The parasites are often found in the windpipe and bronchial tubes, sometimes cloging up the latter causing the animal's death by suffication.

Now comes the most important part, viz: What can be done by way of treatment? The most important step to be taken in this direction is in preventing the spread of the disease when it has made its appearance in the flock or herd. It is always a safe plan to remove the sick from the healthy so that the discharges of mucus may not be allowed to infect the sheds or pastures where healthy animals are kept; even the destruction of affected animals is sometimes advisable if they cannot be removed from the healthy to some other shed or pasture. The lungs and discharges of dead animals should always be removed and destroyed by burning. Lambs should either be kept indoors and given plenty of water to drink before being put in the pasture every day so as to prevent them from drinking out of stagnant pools. All food that may be suspected to contain the parasites through coming in contcct with diseased animals should be destroyed by burning. The following powder is good for lambs early in spring or summer: Sulphate of Iron, 3 ounces; Wormwood, 2½ pounds; Asafœtida, 3 ounces; Charcoal, 1½ pounds. Mix well together and put it in ground feed when given to the lambs. The above quantity is sufficient for 150 lambs one dose each. While the above treatment is advisable to prevent healthy sheep taking the disease, other means must be adopted to assist animals that are already diseased; see that the

affected animals have good, nutritious food. About 1½ ounces of Creosote divided among 100 sheep, and given in water and Benzoin, is also good given in the form of tincture or Friars Balsam.

Inhalations of steam in the air passages are good, or putting heated stones in the building and pouring Carbolic Acid, Oil of Tar, Turpentine or Sulphur. The turpentine should be used very carefully in this way. It could be used without any heat. Another plan of attatk on these parasites is by injections into the windpipe of medicines that will destroy the parasites; but such injections must be very carefully applied, and some qualified person should be consulted previous to such treatment; but no dependence can be put in the treatment of this disease after it has fixed itself in the flock or herd. The best plan is to feed and slaughter the affected animals, and see that the lungs and all discharges from the same are burnt to ashes, thus insuring the total destruction of the parasites.

TUBERCULOSIS.

In 1882 Professor Koch made the announcement that he had traced this disease to the presence of a parasite. In man and the lower animals, tuberculosis is an infectious disease, and may be communicated from one person or animal to another. Even as far back as 1865. Villemin showed that with the cheesy matter found in the tubercles, a person or animal could be inoculated with the disease. But Kock's statement in 1882 was so positive, that nearly all doubt of the correctness of his conclusions were laid to one side, and now it is demonstrated beyond doubt that the same parasite is to be found in man and the lower animals who are affected with this disease.

Tuberculosis among cattle and especially milk cows is one of, if not the most dangerous infectious disease with which we have to contend.

The most common form of tuberculosis in man is that known as consumption, but the disease is not confined to one particular organ in the body, it may attack other parts and appear as scrofula in children. Many of the best authorities on this subject have agreed that the disease is readily communicated from the flesh and milk of one animal to another or even to the human family.

Tuberculosis is not so common among sheep and swine, as it is among cattle, and the disease is also rare among horses.

Many authorities declare that the expectorations coughed up by consumptive persons contain large numbers of parasites, and that through such expectorations the disease is spread to healthy persons and the lower animals. Pet cats and dogs have been known to contract the disease through eating the expectorations from consumptive persons. Statisticans tell us that over 10 per cent. of the human family die from tuberculosis, (consumption). Little pigs or lambs may be inoculated with the disease by drinking cow's milk.

Poultry have oftens been found affected with tuberculosis, and in many cases they become inoculated by picking up the virus from the expectorations of consumptive persons, or from eating diseased organs of animals that have died with the disease; but tuberculosis in cattle is the most common and by far the most important, and demands the careful attention of sanitarians, legislators, and all other persons who wish to preserve the health, not only of the lower animals, but also of the human family.

Some of the principle causes of tuberculosis are as follows: Uncleanliness, overcrowding in badly ventilated barns, inhaling dust and smoke, which causes inflamation of the bronchial tubes. One of the most dangerous means of communication is the use of milk from affected animals, and the system of continual inbreeding which causes constitutional debility and weakness. The disease is far more common among milk cows than in other cattle Cattle and people living in a mountainous country are not so much affected as are those in low lying lands; and cattle kept shut up indoors are more subject to the disease than those who roam about on the pastures, so also are people who work outdoors less liable to consumption than those who are confined in the factory and work shop.

Some of the more common symptoms of this disease in cattle are as follows: A short, dry cough, generally in the morning after feeding and watering, or after a little fast exercise. The hair looks unhealthy and rough; the skin is dry and seems to stick to the ribs. In the latter stages the animal will loose flesh and show signs of

pain when you press on the sides of the chest; but animals may be far gone with the disease before the casual observer will notice any of these symptoms.

What makes this disease so dangerous is not so much the number of cattle lost by it as the large percentage of human beings who die annually from tuberculosis, (phthisis or consumption). Many authors hold that both the flesh and milk of tuberculous animals will convey the disease to man, especially is this true in regard to the milk; but the matter is not quite so clear as regards the flesh of affected animals, and for this reason the parts, (glands), of the body that are specially affected are not generally used as food. But in regard to the milk of cows affected with the disease, there can be no doubt but what it will convey the disease to human beings. It is also the opinion of many authorities that a cow may have the disease and her milk convey the disease to people who drink it for several weeks before there appears to be anything abnormal about the milk; hence the necessity for inspection of all dairy cows. In France, tuberculosis is classed among contagious diseases. The German and Brittish governments are now seriously considering measures for the prevention and extirpation of this disease. The day is not far distant when the United States government will take strong measures to prevent the spread of tuberculosis, and the medical profession of the world has a great work in hand to reveal the true nature of this disease and its prevention and suppression.

Infectious Diseases of Swine.

This is a branch of veterinary work, that up to the present time is very incomplete, more especially the causes and proper treatment of Hog Cholera and Swine Plague. Although these diseases have not made their appearence in South Dakota, North Dakota and other northwestern states, still it is advisable that we take every precaution that is within our reach to prevent the possible outbreak of such destructive scourges.

Both the above named diseases have caused a considerable loss to the farmers in Iowa and Nebraska, and it is at least possible that the disease may yet visit districts where hitherto it has been unknown. These diseases are caused by germs, and as most

readers are aware, have caused great destruction among the hogs in many states.

We very often wonder how swill fed hogs can be healthy and clean for human food. How is it possible to keep all kinds of aminal and vegetable refuse from hotel tables, all thrown together in a dirty recepticle that has not been cleaned nor disinfected for years? Thus rotting and fermenting, the putrifying mass lays before a burning sun in midsummer for several days, possibly for weeks. Here is a sure breeding place for disease germs, and without even a mild protest from those in authority, this rotten matter is hauled through the streets of our cities and fed to swine within the limits of nearly every town and city in the country; and the worst part of the business is, that the animals fed on such rotten stuff, are put on the market as suitable food for human beings. It is no wonder that the animals thus fed are afflicted with some of the most dangerous diseases, not only to their own race but also to mankind. Even farmers are two careless about the cleanliness of the hog pen. Instead of cleaning out the wet excrement before fermentation sets in, the easier plan of throwing a lot of dry bedding on top of it is adopted; and, as is always the custom of hogs, they burrow through the dry and also the wet and putrified, and the result is that the very air they breath is contaminated with disease germs, and the wonder is that many more of them do not die. If you wish to ward of a possible visitation of contagious diseases among your hogs, do keep them clean and feed them good, clean food. Never allow your hogs to eat the carcass of animals that die from some disease. Instead of allowing the hogs to eat such food, take the carcasses of the dead animals and burn them to ashes or bury them at least six feet under the surface of the earth, and those who raise and feed swill fed hogs should have the pleasure of eating such pork after the hogs are killed.

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